FCC TEST REPORT

REPORT NO.: RF920318R01
MODEL NO.: WLL220
RECEIVED: Mar. 18, 2003
TESTED: Mar. 14 ~ Apr. 2, 2003

APPLICANT: Askey Computer Corp.

ADDRESS: 10F, No.119, ChienKang Rd., Chung-Ho, Taipei, Taiwan, R.O.C.

ISSUED BY: Advance Data Technology Corporation

LAB LOCATION: 47 14th Lin, Chiapau Tsun, Linko, Taipei, Taiwan, R.O.C.

0528
ILAC MRA

Lab Code: 200102-0

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1. CERTIFICATION

PRODUCT :	2.4GHz/5GHz Mini - PCI Card
BRAND NAME :	ASKEY
MODEL NO. :	WLL220
APPLICANT :	Askey Computer Corp.
STANDARDS :	47 CFR Part 15, Subpart C (Section 15.247), Subpart E (Section 15.407), ANSI C63.4-1992

We, **Advance Data Technology Corporation**, hereby certify that one sample of the designation has been tested in our facility from Mar. 14 ~ Apr. 2, 2003. The test record data evaluation and Equipment under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions herein specified.

CHECKED BY: Rennie Wang , **DATE:** April 17, 2003

Rennie Wang

APPROVED BY: for , **DATE:** April 17, 2003

Dr. Alan Lane

Manager

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR Part 15, Subpart C			
Standard Section	**Test Type and Limit**	**Result**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is –12.39dBuV at 0.24MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit
15.247(c)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit Minimum passing margin is –2.0dBuV at 2390.00MHz
15.247(d)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit
15.247(c)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit

APPLIED STANDARD: 47 CFR Part 15, Subpart E			
Standard Section	**Test Type**	**Result**	**REMARK**
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is –9.50dBuV at 0.23MHz
15.407(b/1/2/3)(b)(5)	Electric Field Strength Spurious Emissions, 30 MHz – 40000 MHz	PASS	Meet the requirement of limit Minimum passing margin is –1.25dBuV at 5715.00MHz
15.407(a/1/2/3)	Peak Transmit Power	PASS	Meet the requirement of limit
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit
15.407(a/1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	2.4GHz/5GHz Mini - PCI Card
MODEL NO.	WLL220
POWER SUPPLY	3.3VDC from host equipment
MODULATION	802.11b: DSSS 802.11a: OFDM
TRANSFER RATE	802.11b: 1 / 2 / 5.5 / 11Mbps 802.11a: 6 to 54Mbps *(Turbo mode : up to 108Mbps)
FREQUENCY RANGE	802.11b: 2412MHz ~ 2462MHz 802.11a: 5.15GHz ~ 5.35GHz, 5.725GHz ~ 5.825GHz
NUMBER OF CHANNEL	802.11b: 11 802.11a: 12 for Normal mode / 5 for Turbo mode
CHANNEL SPACING	802.11b: 5MHz 802.11a: 20MHz for Normal mode / 40MHz for Turbo mode
OUTPUT POWER	802.11b: 16.45dBm 802.11a: 22.51dBm
DATA CABLE	NA
ANTENNA TYPE	PIFA antenna
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. The 2.4GHz/5GHz Mini - PCI Card is specified to laptop PC which brand is COMPAL, and the model number is BCL50.
2. The notebook is powered by the following adapter:

BRAND :	LITEON
MODEL :	PA-1600-07
INPUT :	100-240V, 1.5A, 50-60Hz
OUTPUT :	19V---3.16A

3. The EUT operates in both the 5GHz and 2.4GHz Bands and compatibility with 802.11a and 802.11b technology.
4. This EUT is capable of providing data rates up to 108Mbps in turbo mode.
5. For more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

For 802.11b: Eleven channels are provided to this EUT.

Channel	Frequency	Channel	Frequency
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

NOTE:

1. Below 1 GHz, the channel 1, 6, and 11 were pre-tested in chamber. The channel 11, worst case one, was chosen for final test.
2. Above 1 GHz, the channel 1, 6, and 11 were tested individually.

For 802.11a: Twelve channels are provided to this EUT for Normal mode.

Channel	Frequency	Channel	Frequency
1	5180 MHz	7	5300 MHz
2	5200 MHz	8	5320 MHz
3	5220 MHz	9	5745MHz
4	5240 MHz	10	5765MHz
5	5260 MHz	11	5785MHz
6	5280 MHz	12	5805MHz

Five channels are provided to this EUT for Turbo Mode.

Channel	Frequency	Channel	Frequency
1	5210 MHz	4	5760MHz
2	5250 MHz	5	5800MHz
3	5290 MHz		

NOTE:

1. The EUT was transmitting at full power on the specified channel with a duty cycle of 99% (maximum allowed). The EUT was tested in both normal mode (channel bandwidth of approximately 30MHz) and turbo mode (channel bandwidth of approximately 60MHz).
2. “Normal Mode” allows data rates of up to 54Mbps. The device was, therefore, tested in Normal mode at the data rate that produced the highest output power for normal mode (6Mbps).
3. “Turbo Mode” allows data rates of up to 108Mbps. At data rates higher than 12Mbps the PA gain is reduced to improve signal fidelity. The device was, therefore, tested in turbo mode at the data rate that produced the highest output power for turbo mode (12Mbps).
4. Channel 1, 4, 5, 8, 9 and 12 are the closest frequencies to the band edge, were chosen for final test of Normal Mode.
5. Channel 1 ~ 5 were chosen for final test of turbo mode.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a 2.4GHz/5GHz Mini - PCI Card. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 15, Subpart C. (15.247),
Subpart E (15.407). ANSI C63.4 : 1992

All tests have been performed and recorded as per the above standards.

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	PRINTER	EPSON	LQ-300+	DCGY017096	FCC DOC APPROVED

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.2m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core

NOTE: All power cords of the above support units are non shielded (1.8m).

4. TEST TYPES AND RESULTS (FOR PART 802.11b)

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

NOTE:
1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS30	847793/022	Mar. 10, 2004
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH2-Z5	828075/003	July 23, 2003
ROHDE & SCHWARZ 200-A Four-line V-Network	ENV4200	830326/018	Oct. 30, 2003
* ROHDE & SCHWARZ 4-wire ISN	ENY41	838119/028	Nov. 29, 2003
* ROHDE & SCHWARZ 2-wire ISN	ENY22	837497/018	Nov. 29, 2003
EMCO-L.I.S.N. (for peripheral)	3825/2	90031627	July 23, 2003
Software	Cond-V2M1	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C05.01	July 19, 2003
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-305	Feb. 23, 2004
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-306	Feb. 23, 2004

NOTE:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. "*": These equipment are used for conducted telecom port test only (if tested).
3. The test was performed in ADT Shielded Room No. 5.
4. The VCCI Site Registration No. is C-1093.

4.1.3 TEST PROCEDURES

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

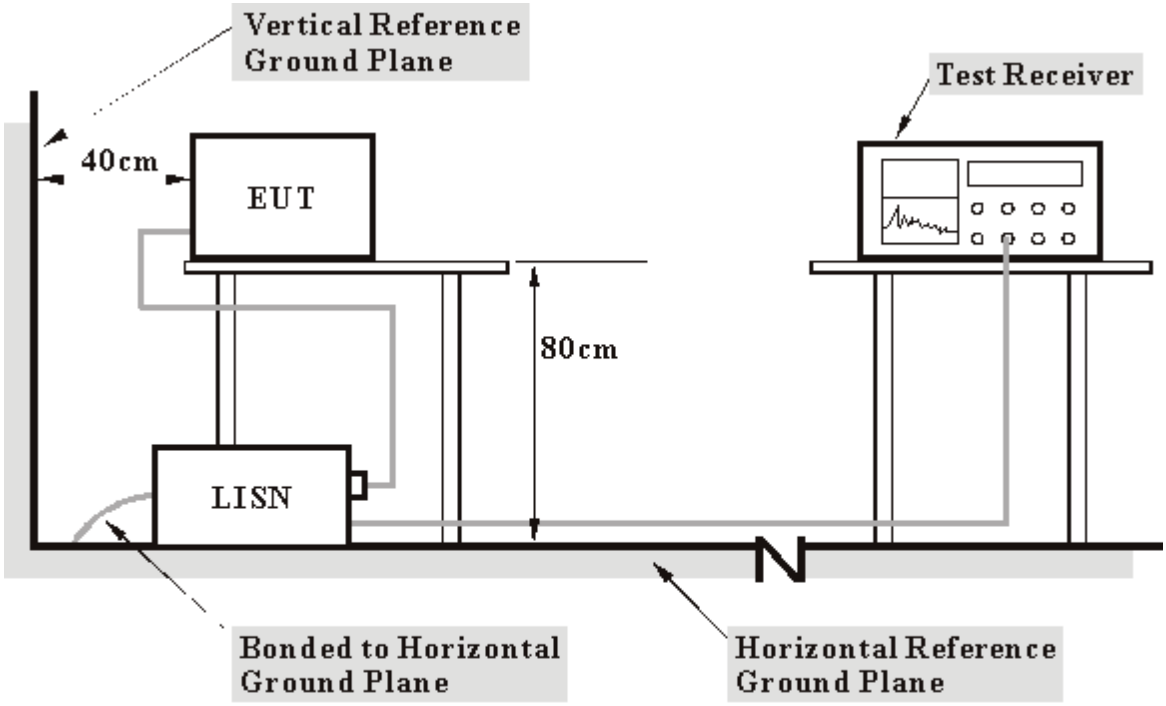
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits could not be reported

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.1.6 EUT OPERATING CONDITIONS

a. The computer system ran a test program to enable EUT under transmission/receiving condition continuously at specific channel frequency.
b. The computer system sent "H" messages to its screen.
c. The computer system sent "H" messages to printer, and the printer prints them on paper.

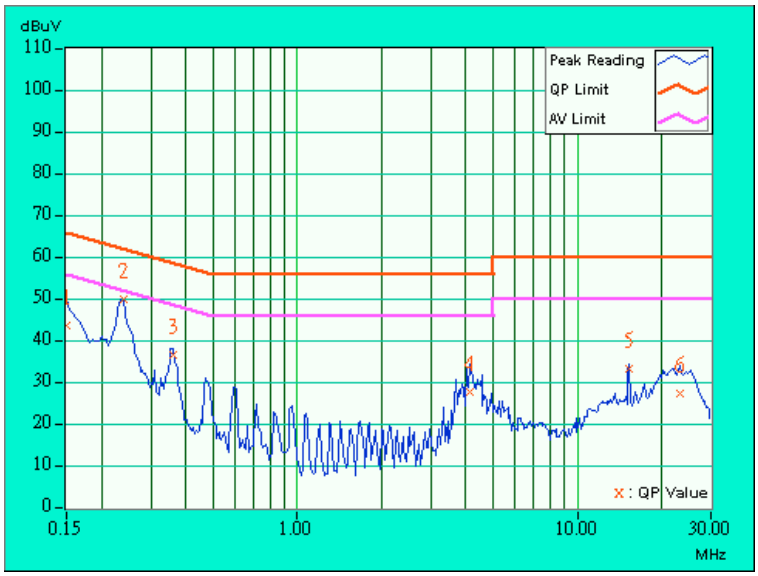
4.1.7 TEST RESULTS

EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Channel 1	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	26 deg. C, 50%RH, 991 hPa	**TESTED BY**: Gary Chang	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.150	0.10	42.50	-	42.60	-	66.00	56.00	-23.40	-
2	0.240	0.10	48.67	-	48.77	-	62.10	52.10	-13.33	-
3	0.361	0.10	35.45	-	35.55	-	58.71	48.71	-23.16	-
4	4.148	0.40	26.60	-	27.00	-	56.00	46.00	-29.00	-
5	15.289	0.82	32.28	-	33.10	-	60.00	50.00	-26.90	-
6	23.164	1.16	26.32	-	27.48	-	60.00	50.00	-32.52	-

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.

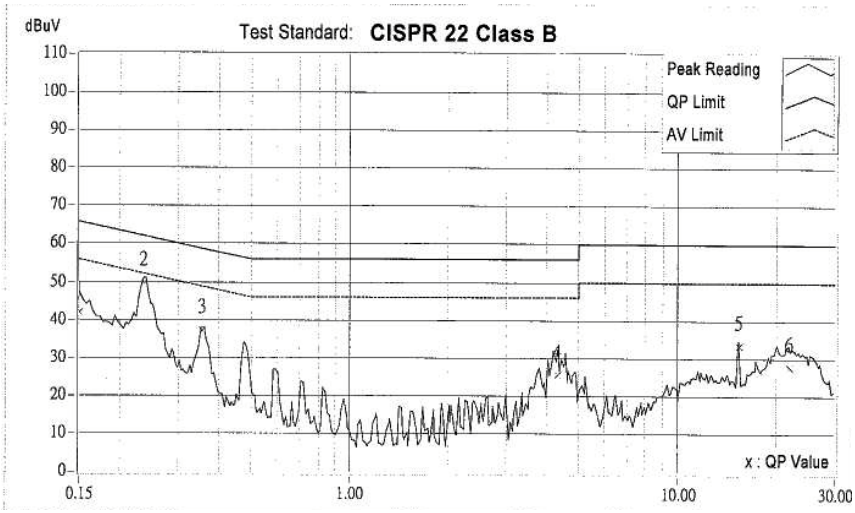


EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Channel 1	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	26 deg. C, 50%RH, 991 hPa	**TESTED BY**: Gary Chang	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.150	0.10	41.20	-	41.30	-	66.00	56.00	-24.70	-
2	0.236	0.10	49.21	-	49.31	-	62.24	52.24	-12.93	-
3	0.357	0.10	36.42	-	36.52	-	58.80	48.80	-22.28	-
4	4.313	0.31	24.69	-	25.00	-	56.00	46.00	-31.00	-
5	15.289	0.52	32.68	-	33.20	-	60.00	50.00	-26.80	-
6	21.750	0.77	27.00	-	27.77	-	60.00	50.00	-32.23	-

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.

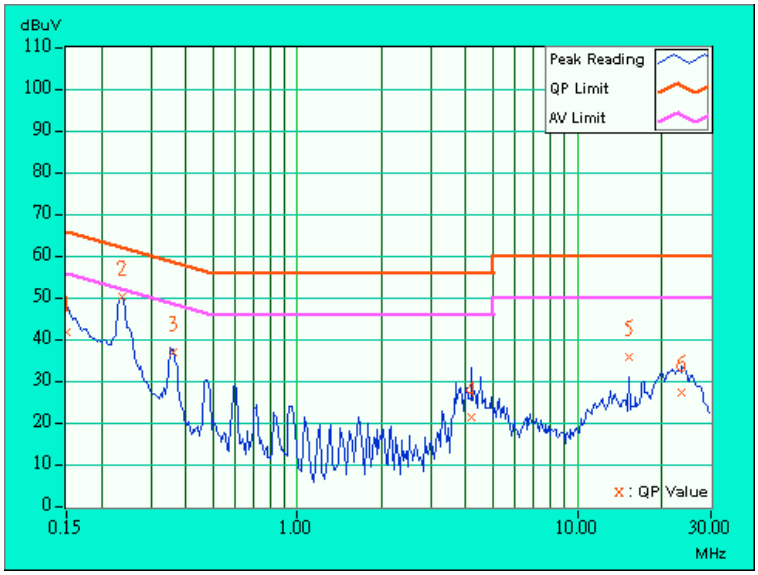


EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Channel 6	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	26 deg. C, 50%RH, 991 hPa	**TESTED BY**: Gary Chang	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.150	0.10	40.50	-	40.60	-	66.00	56.00	-25.40	-
2	0.236	0.10	49.19	-	49.29	-	62.24	52.24	-12.95	-
3	0.361	0.10	35.83	-	35.93	-	58.71	48.71	-22.78	-
4	4.203	0.41	20.35	-	20.76	-	56.00	46.00	-35.24	-
5	15.215	0.81	34.77	-	35.58	-	60.00	50.00	-24.42	-
6	23.703	1.17	26.20	-	27.37	-	60.00	50.00	-32.63	-

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.

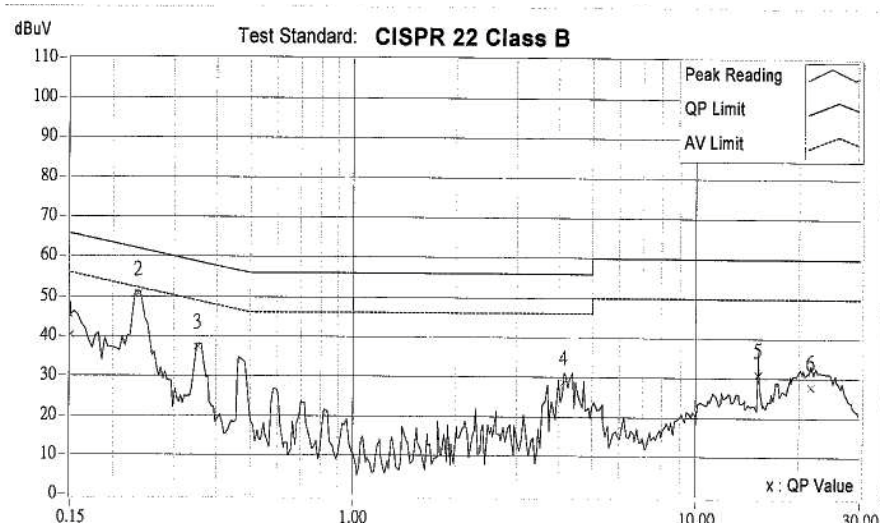


EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Channel 6	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	26 deg. C, 50%RH, 991 hPa	**TESTED BY**: Gary Chang	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.150	0.10	39.31	-	39.41	-	66.00	56.00	-26.59	-
2	0.236	0.10	49.75	-	49.85	-	62.24	52.24	-12.39	-
3	0.353	0.10	36.54	-	36.64	-	58.89	48.89	-22.25	-
4	4.137	0.30	27.83	-	28.13	-	56.00	46.00	-27.87	-
5	15.215	0.51	30.14	-	30.65	-	60.00	50.00	-29.35	-
6	21.605	0.77	27.12	-	27.89	-	60.00	50.00	-32.11	-

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.

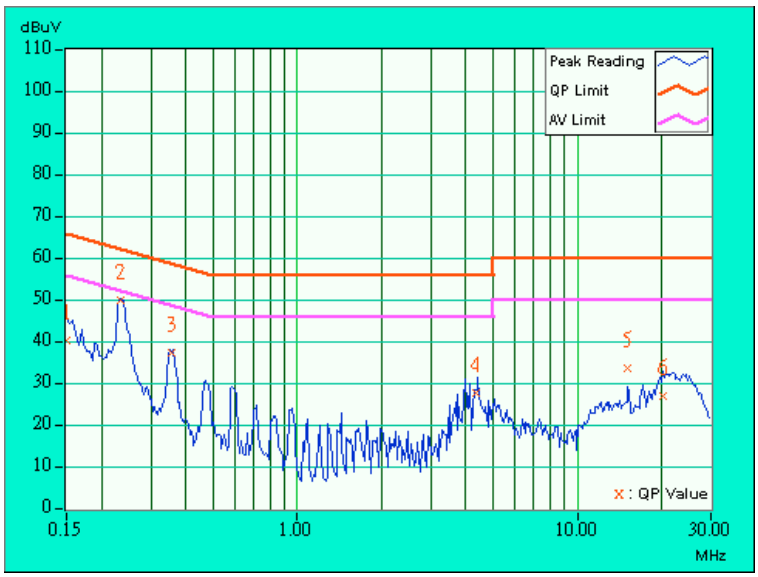


EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Channel 11	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	26 deg. C, 50%RH, 991 hPa	**TESTED BY**: Gary Chang	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.150	0.10	39.29	-	39.39	-	66.00	56.00	-26.61	-
2	0.233	0.10	48.75	-	48.85	-	62.33	52.33	-13.48	-
3	0.357	0.10	36.39	-	36.49	-	58.81	48.81	-22.32	-
4	4.371	0.41	26.54	-	26.95	-	56.00	46.00	-29.05	-
5	15.152	0.81	32.73	-	33.54	-	60.00	50.00	-26.46	-
6	20.262	1.11	25.78	-	26.89	-	60.00	50.00	-33.11	-

Remarks:

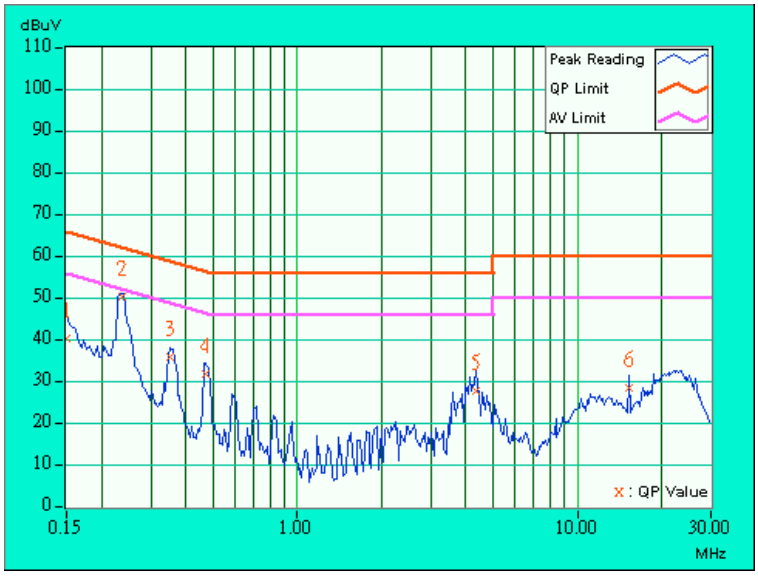
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Channel 11	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	26 deg. C, 50%RH, 991 hPa	**TESTED BY**: Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.150	0.10	39.84	-	39.94	-	66.00	56.00	-26.06	-
2	0.236	0.10	49.71	-	49.81	-	62.24	52.24	-12.43	-
3	0.349	0.10	35.39	-	35.49	-	58.98	48.98	-23.49	-
4	0.473	0.11	31.43	-	31.54	-	56.45	46.45	-24.91	-
5	4.371	0.31	27.37	-	27.68	-	56.00	46.00	-28.32	-
6	15.293	0.52	27.99	-	28.51	-	60.00	50.00	-31.49	-

Remarks:
1. "*": Undetectable
2. QP. and AV. are abbreviations of quasi-peak and average individually.
3. "-": NA
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value
6. Emission Level = Correction Factor + Reading Value.



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
* HP Spectrum Analyzer	8590L	3544A01176	May 13, 2003
* HP Preamplifier	8447D	2944A08485	Apr. 29, 2003
* HP Preamplifier	8449B	3008A01201	Dec. 01, 2003
* HP Preamplifier	8449B	3008A01292	Aug. 07, 2003
*Spectrum Analyzer	8593E	3926A04191	Mar. 24, 2004
*Test Receiver	ESI7	838496/016	Feb. 23, 2004
SCHAFFNER Tunable Dipole Antenna SCHWARZBECK Tunable Dipole Antenna	VHBA 9123 UHA 9105	459 977	Nov. 22, 2003
* CHASE BILOG Antenna	CBL6112A	2221	Aug. 02, 2003
* SCHWARZBECK Horn Antenna	BBHA9120-D1	D130	July 03, 2003
* EMCO Horn Antenna	3115	9312-4192	Apr. 09, 2003
* EMCO Turn Table	1060	1115	NA
* SHOSHIN Tower	AP-4701	A6Y005	NA
* Software	ADT_Radiated_V5.09	NA	NA
* ANRITSU RF Switches	MP59B	M35046	Jul. 11. 2003
* TIMES RF cable	LMR-600	CABLE-ST5-01	Jul. 11. 2003

NOTE: 1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. "*" = These equipment are used for the final measurement.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The test was performed in ADT Open Site No. 5.
5. The VCCI Site Registration No. is R-1039.

4.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using the quasi-peak method or average method as specified and then reported in Data sheet peak mode and QP mode.

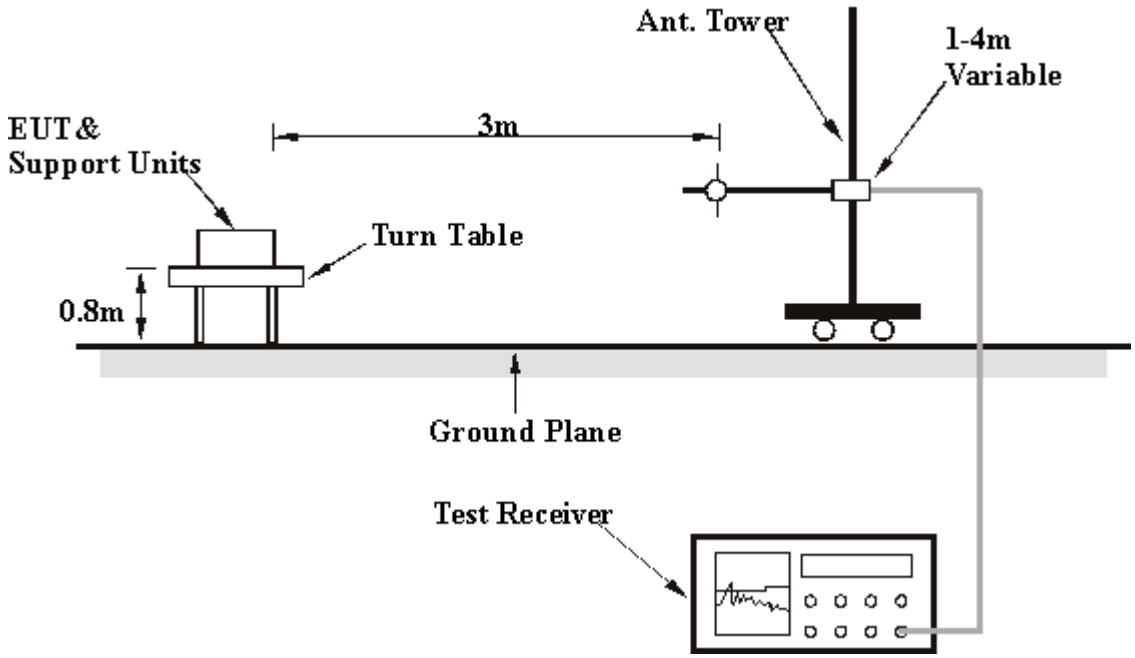
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 300 Hz for Average detection (AV) at frequency above 1GHz.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

4.2.7 TEST RESULTS

EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Channel 11	**FREQUENCY RANGE**	Below 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24 deg. C, 70%RH, 991 hPa	**TESTED BY**: Bunny Yao	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	223.00	31.5 QP	46.00	-14.50	1.00 H	12	18.40	13.10
2	288.00	29.3 QP	46.00	-16.70	1.55 H	355	12.70	16.60
3	320.00	27.6 QP	46.00	-18.40	1.10 H	221	10.50	17.10
4	384.00	33.7 QP	46.00	-12.30	1.69 H	209	15.10	18.70
5	528.30	26.2 QP	46.00	-19.80	1.12 H	354	5.00	21.10
6	625.00	32.4 QP	46.00	-13.60	1.63 H	198	9.60	22.80
7	746.50	32.7 QP	46.00	-13.30	1.27 H	261	8.60	24.10

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Channel 11	**FREQUENCY RANGE**	Below 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24 deg. C, 70%RH, 991 hPa	**TESTED BY**: Bunny Yao	

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	288.01	28.7 QP	46.00	-17.30	1.56 V	339	12.00	16.60
2	320.01	28.5 QP	46.00	-17.50	1.47 V	184	11.30	17.20
3	384.01	31.0 QP	46.00	-15.00	1.34 V	261	12.40	18.70
4	433.00	34.9 QP	46.00	-11.10	1.32 V	328	15.40	19.50
5	529.00	31.5 QP	46.00	-14.50	1.58 V	257	10.40	21.10
6	625.00	32.3 QP	46.00	-13.70	1.39 V	343	9.60	22.80
7	745.80	37.8 QP	46.00	-8.20	1.55 V	194	13.80	24.10

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Channel 1	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24 deg. C, 70%RH, 991 hPa	**TESTED BY**: Bunny Yao	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	63.4 PK	74.00	-10.60	1.24 H	0	33.80	29.60
1	2390.00	52.0 AV	54.00	-2.00	1.24 H	0	22.40	29.60
2	*2412.00	107.2 PK			1.24 H	0	77.60	29.60
2	*2412.00	100.3 AV			1.24 H	0	70.70	29.60
3	4824.00	48.8 PK	74.00	-25.20	1.53 H	149	13.80	35.00
4	6336.00	54.6 PK	87.20	-32.60	1.36 H	307	16.60	38.00
4	6336.00	52.7 AV	80.30	-27.60	1.36 H	307	14.70	35.00

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	62.8 PK	74.00	-11.20	1.15 V	96	33.20	29.60
1	2390.00	50.9 AV	54.00	-3.10	1.15 V	96	21.30	29.60
2	*2412.00	106.3 PK			1.15 V	96	76.70	29.60
2	*2412.00	99.5 AV			1.15 V	96	69.90	29.60
3	4824.00	52.0 PK	74.00	-22.00	1.61 V	189	17.00	35.00
3	4824.00	39.9 AV	54.00	-14.10	1.61 V	189	4.90	35.00
4	6336.00	60.1 PK	86.30	-26.10	1.06 V	264	22.00	38.00
4	6336.00	56.4 AV	79.50	-23.10	1.06 V	264	18.40	38.00

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Channel 6	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24 deg. C, 70%RH, 991 hPa	**TESTED BY**: Bunny Yao	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	107.1 PK			1.40 H	13	77.40	29.70
1	*2437.00	99.9 AV			1.40 H	13	70.20	29.70
2	4874.00	49.6 PK	74.00	-24.40	1.33 H	246	14.40	35.20
3	6336.00	54.3 PK	87.10	-32.80	1.23 H	20	16.30	38.00
3	6336.00	51.9 AV	79.90	-28.00	1.23 H	20	13.90	35.20

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	106.2 PK			1.48 V	268	76.50	29.70
1	*2437.00	99.2 AV			1.48 V	268	69.50	29.70
2	4874.00	53.0 PK	74.00	-21.00	1.86 V	318	17.80	35.20
2	4874.00	41.7 AV	54.00	-12.30	1.86 V	318	6.50	35.20
3	6336.00	57.4 PK	86.20	-28.80	1.30 V	127	19.30	38.00
3	6336.00	55.0 AV	79.20	-24.20	1.30 V	127	17.00	38.00

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Channel 11	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24 deg. C, 70%RH, 991 hPa	**TESTED BY**: Bunny Yao	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	106.6 PK			1.17 H	100	76.80	29.80
1	*2462.00	99.5 AV			1.17 H	100	69.70	29.80
2	2496.60	59.7 PK	74.00	-14.30	1.17 H	100	29.80	29.90
2	2496.60	50.2 AV	54.00	-3.80	1.17 H	100	20.30	29.90
3	4924.00	48.9 PK	74.00	-25.10	1.34 H	77	13.50	35.40
4	6336.00	63.4 PK	86.60	-23.20	1.47 H	65	25.40	38.00
4	6336.00	53.2 AV	79.50	-26.30	1.47 H	65	15.20	35.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	106.4 PK			1.60 V	286	76.60	29.80
1	*2462.00	99.1 AV			1.60 V	286	69.30	29.80
2	2496.60	61.0 PK	74.00	-13.00	1.60 V	286	31.10	29.90
2	2496.60	49.4 AV	54.00	-4.60	1.60 V	286	19.50	29.90
3	4924.00	52.6 PK	74.00	-21.40	1.23 V	12	17.20	35.40
3	4924.00	41.4 AV	54.00	-12.60	1.23 V	12	6.00	35.40
4	6336.00	63.8 PK	86.40	-22.60	1.33 V	264	25.80	38.00
4	6336.00	54.8 AV	79.10	-24.30	1.33 V	264	16.80	38.00

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	July 24, 2003

NOTE:
The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

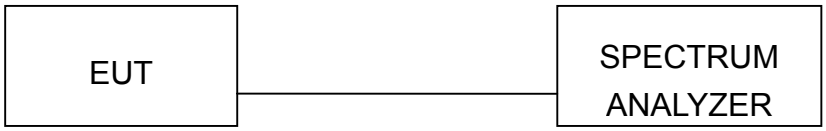
4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 100kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

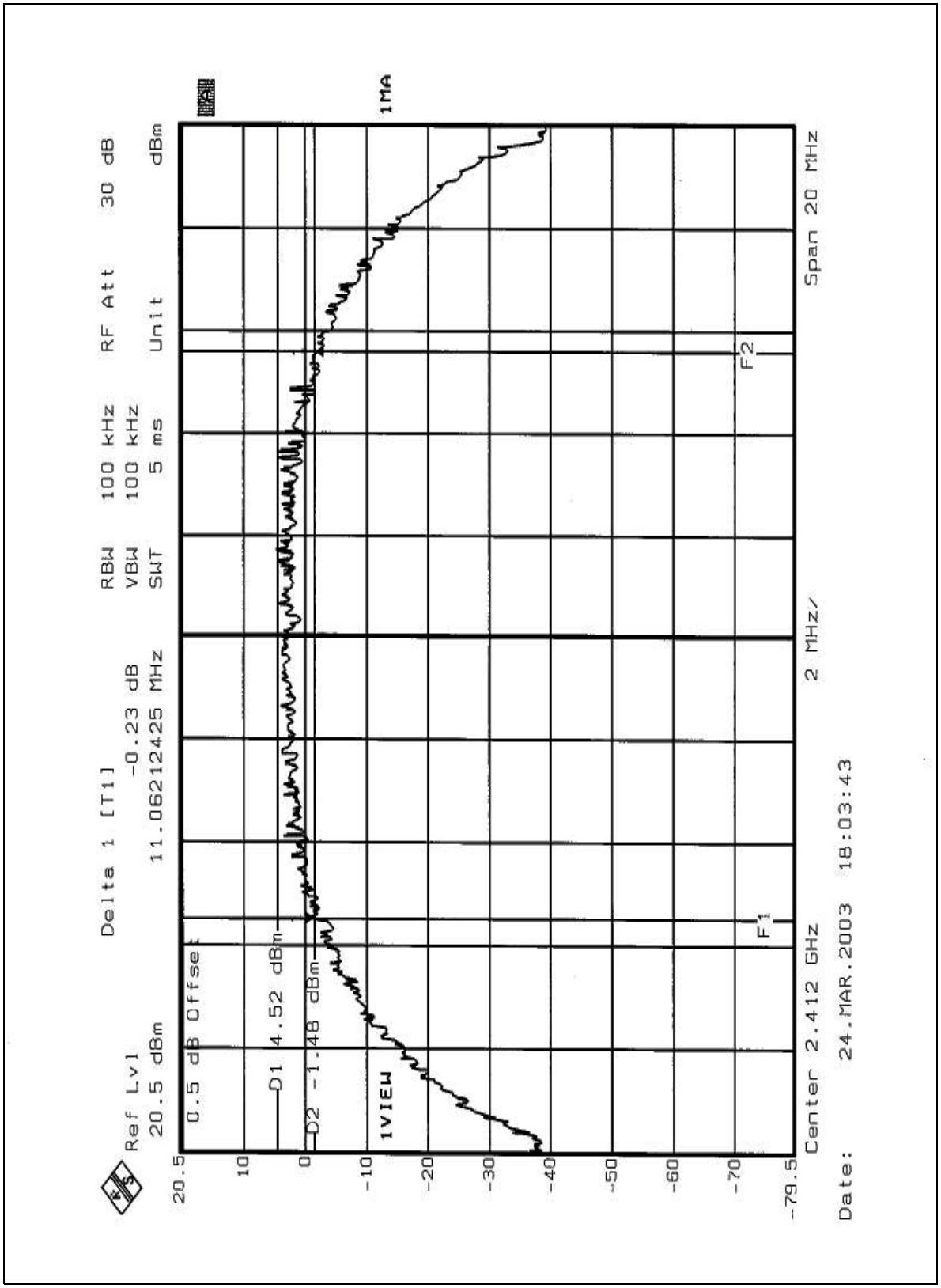
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

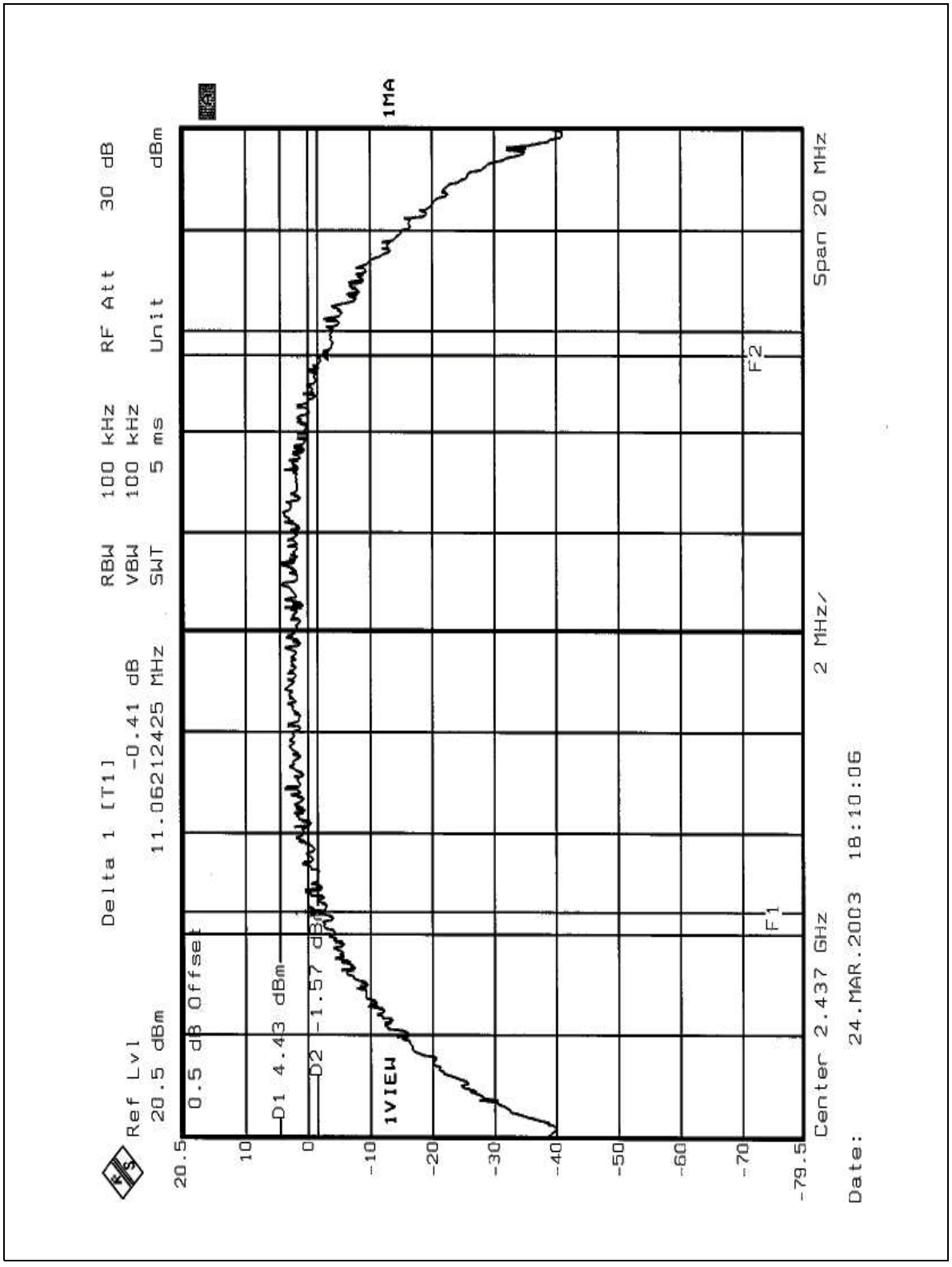
EUT	2.4GHz/5GHz Mini - PCI Card	MODEL	WLL220
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	19 deg. C, 69RH, 991 hPa
TESTED BY: Ansen Lei			

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	11.06	0.5	PASS
6	2437	11.06	0.5	PASS
11	2462	11.62	0.5	PASS

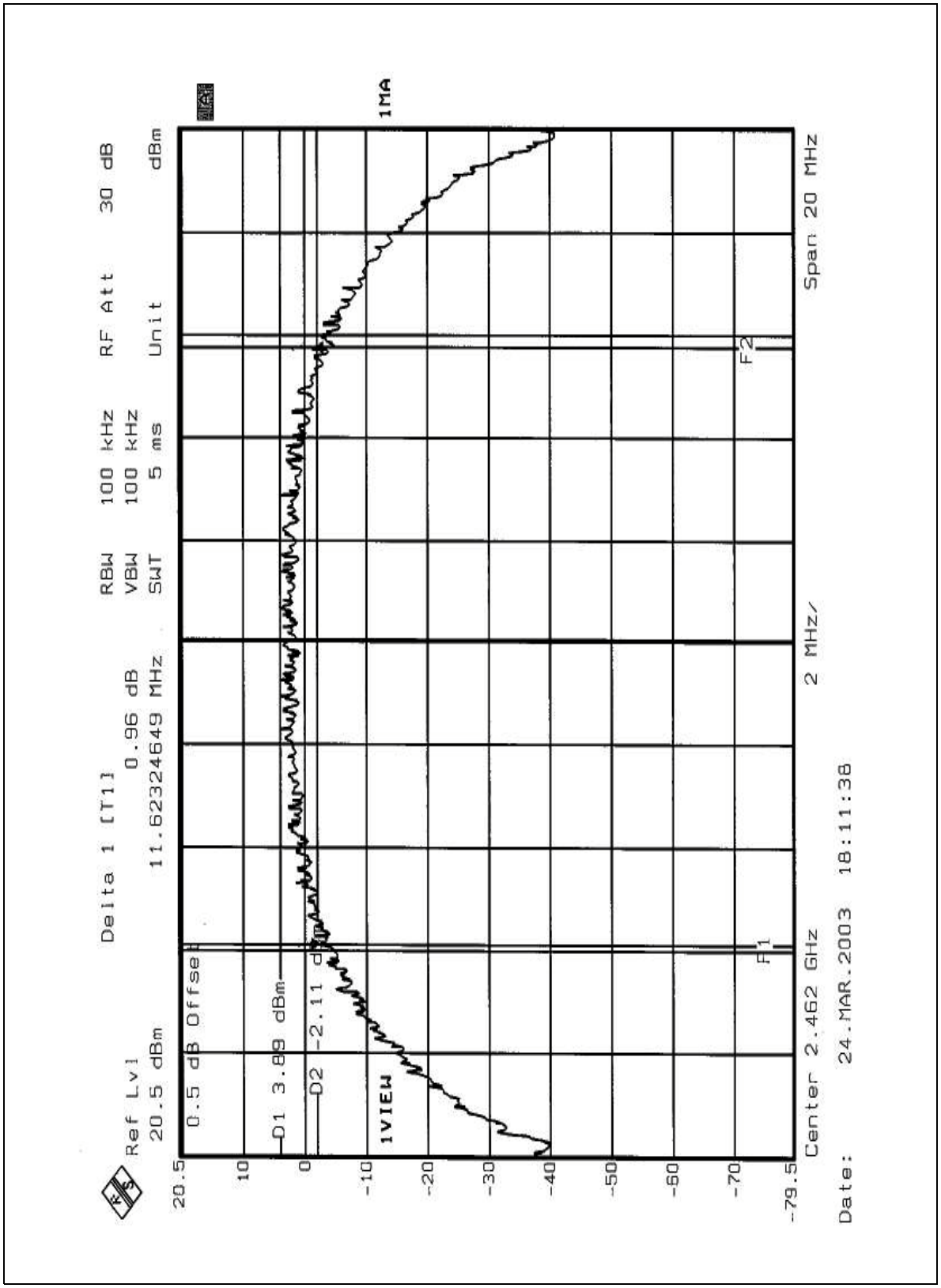
CH1


Delta 1 [T1]
-0.23 dB
11.06212425 MHz
RBW 100 kHz
VBW 100 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20.5 dBm
0.5 dB Offset
D1 4.52 dBm
D2 -1.48 dBm
1VIEW
1MA
F1
F2
Center 2.412 GHz
2 MHz/
Span 20 MHz
Date: 24.MAR.2003 18:03:43
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

CH6


Ref Lvl
20.5 dBm
0.5 dB Offset
D1 4.43 dBm
D2 -1.57 dB
1VIEW
Delta 1 [T1]
-0.41 dB
11.06212425 MHz
RBW 100 kHz
VBW 100 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1MA
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz
Date: 24.MAR.2003 18:10:06
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

CH11


Ref Lvl
20.5 dBm
0.5 dB Offset
D1 3.89 dBm
D2 -2.11 dB
1VIEW
Delta 1 [T1]
0.96 dB
11.62324649 MHz
RBW 100 kHz
VBW 100 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1MA
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz
Date: 24.MAR.2003 18:11:38
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

4.4 MAXIMUM PEAK OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.4.2 INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
POWER METER	E4416A	GB41291118	Jul. 30, 2003
PEAK POWER SENSOR	E9327A	US40440722	Jul. 30, 2003

NOTE:
The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

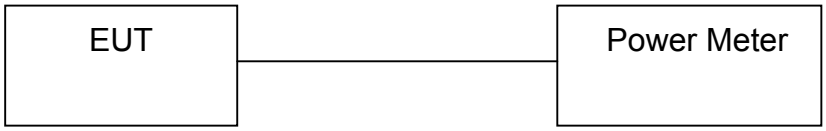
4.4.3 TEST PROCEDURES

The transmitter output was connected to the peak power meter.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.4.7 TEST RESULTS

EUT	2.4GHz/5GHz Mini - PCI Card	MODEL	WLL220
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	19deg.C, 69RH, 991 hPa
TESTED BY: Ansen Lei			

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	16.45	30	PASS
6	2437	16.43	30	PASS
11	2462	16.34	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	July 24, 2003

NOTE:
The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

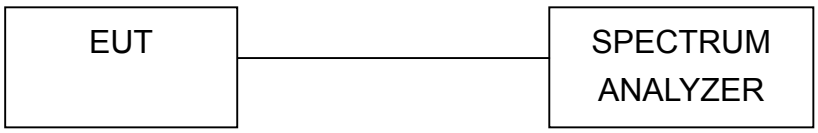
4.5.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3 kHz RBW and 30 kHz VBW, set sweep time = span/3 kHz. The power spectral density was measured and recorded.
The sweep time is allowed to be longer than span/3 kHz for a full response of the mixer in the spectrum analyzer.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

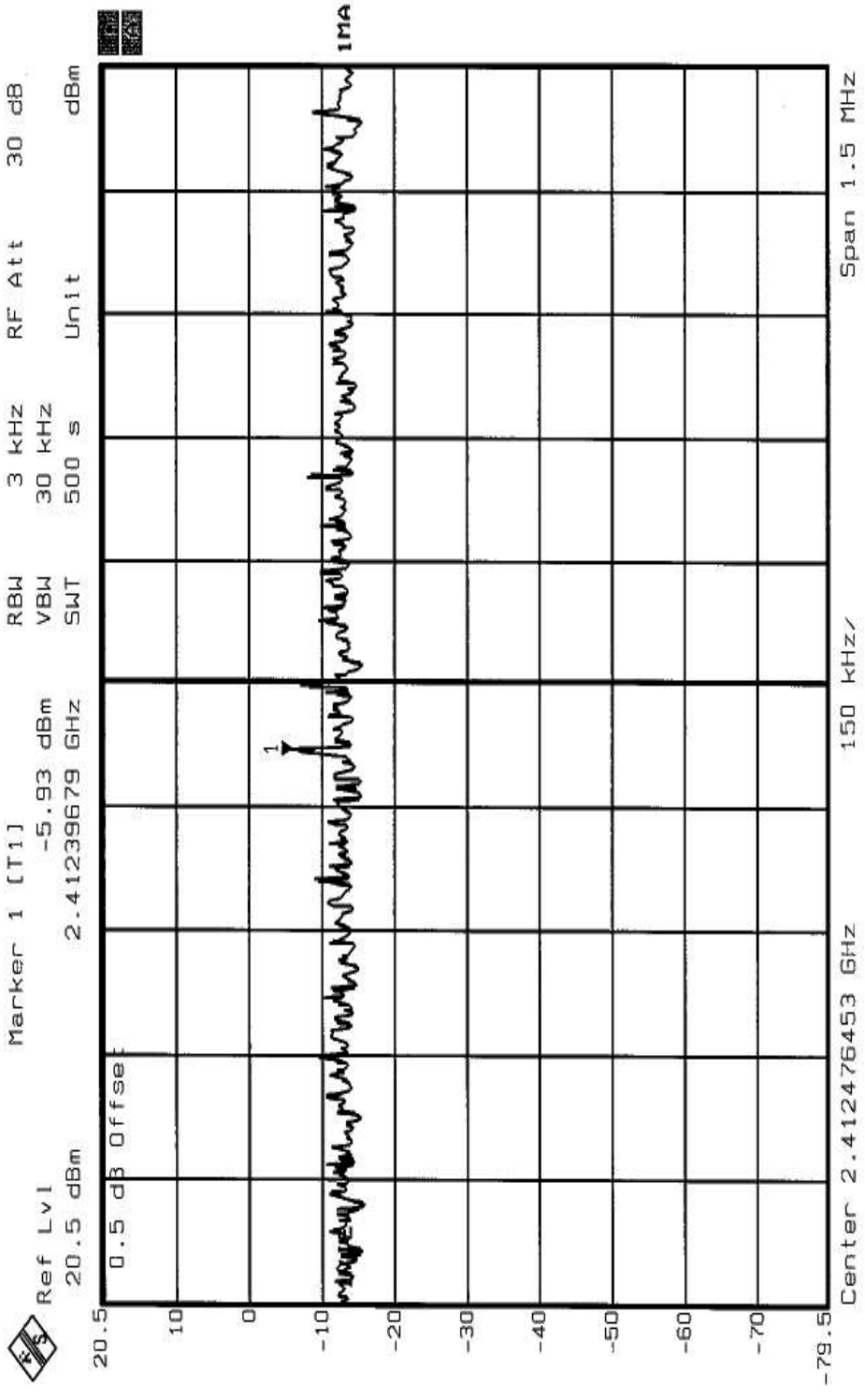
Same as Item 4.3.6

4.5.7 TEST RESULTS

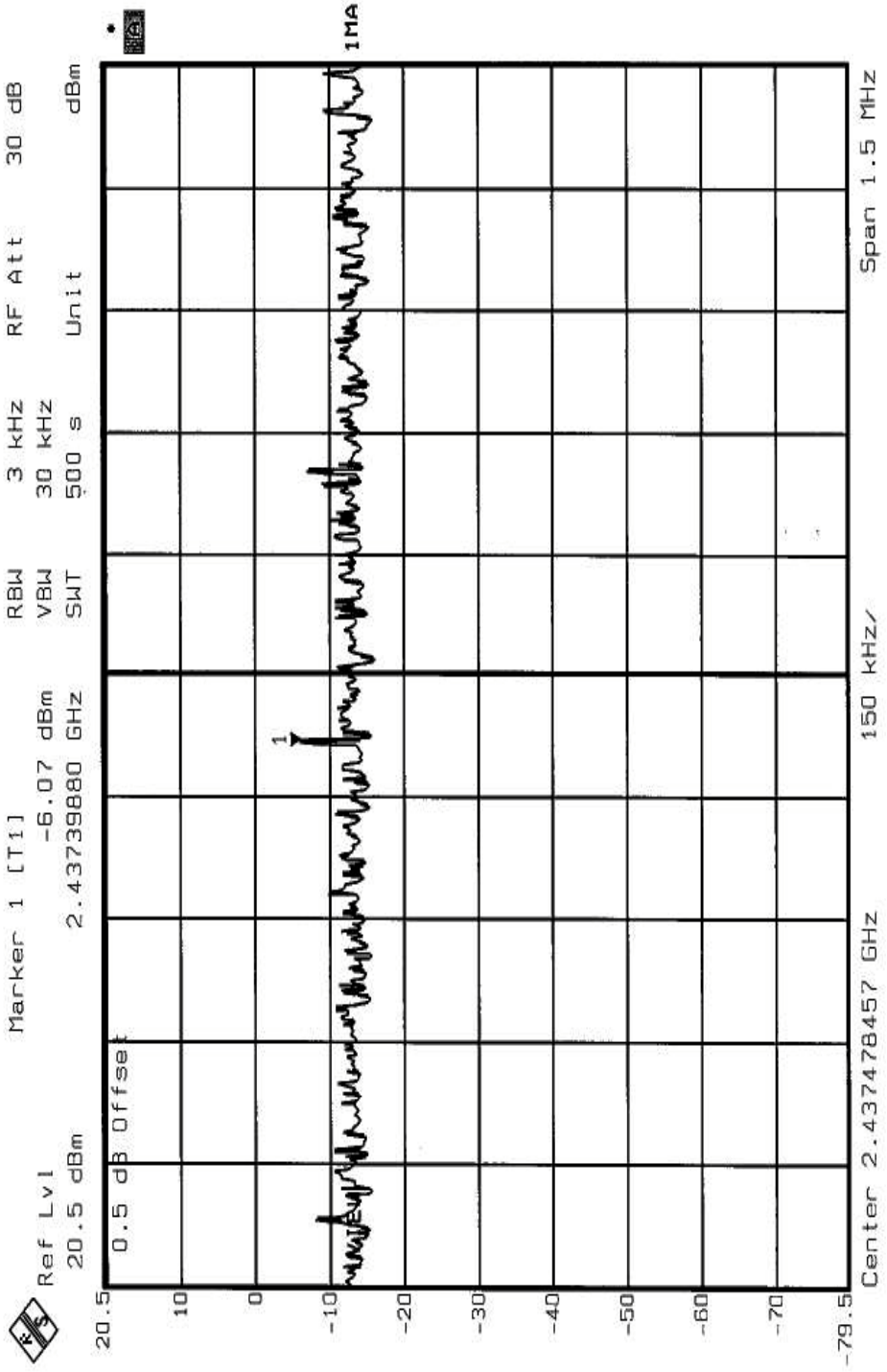
EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	19deg. C, 69RH, 991 hPa
TESTED BY: Ansen Lei			

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-5.93	8	PASS
6	2437	-6.07	8	PASS
11	2462	-6.05	8	PASS

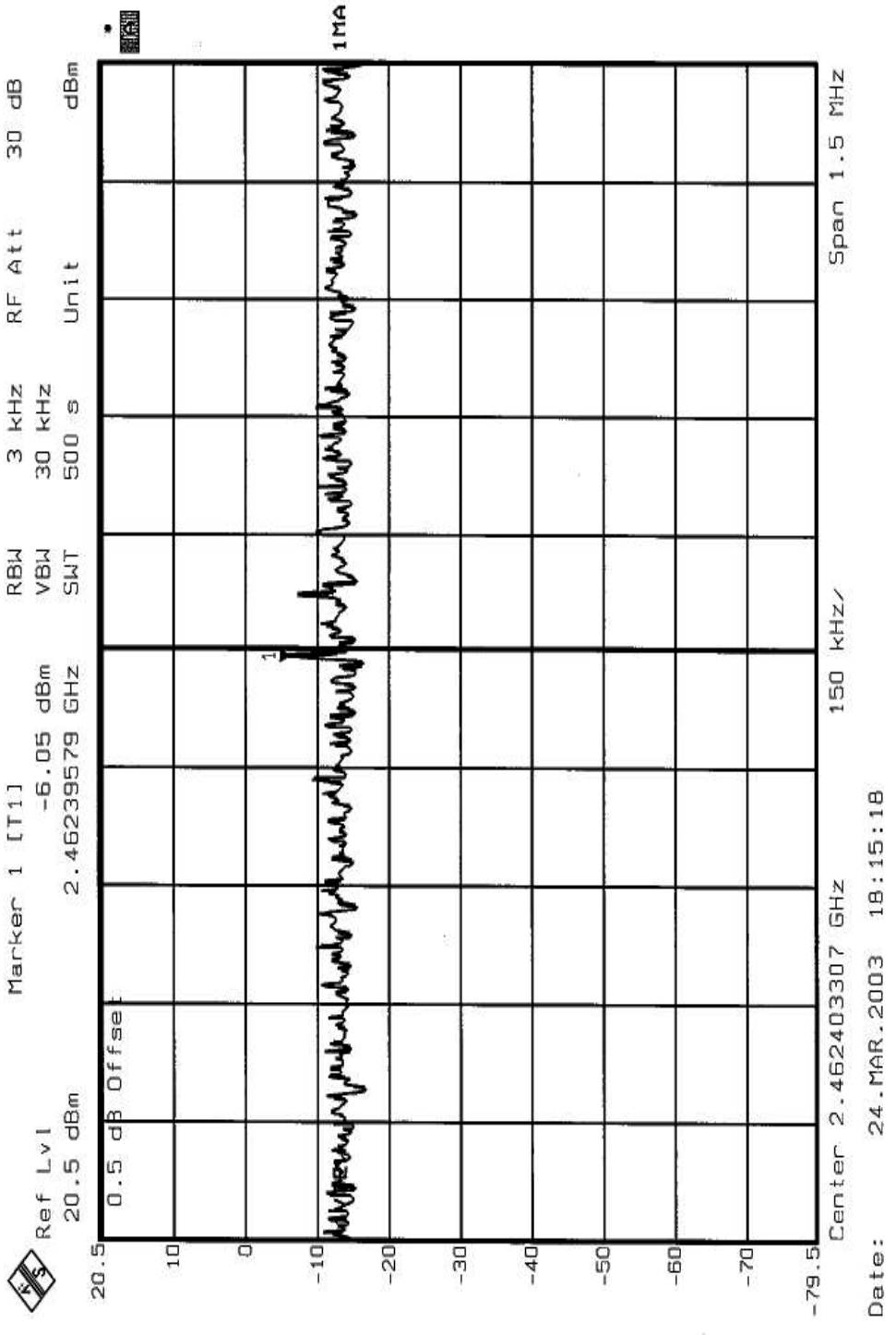
CH1


Ref Lvl
20.5 dBm
0.5 dB Offset
Marker 1 [T1]
-5.93 dBm
2.41239679 GHz
RBW 3 kHz
VBW 30 kHz
SWT 500 s
RF Att 30 dB
Unit dBm
1MA
Span 1.5 MHz
150 kHz/
Center 2.412476453 GHz
Date: 24.MAR.2003 18:04:48
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

CH6


Marker 1 [T1]
-6.07 dBm
2.4373880 GHz
RBW 3 kHz
VBW 30 kHz
SWT 500 s
RF Att 30 dB
Unit dBm
Ref Lvl
20.5 dBm
0.5 dB Offset
1MA
Span 1.5 MHz
150 kHz/
Center 2.4378457 GHz
Date: 24.MAR.2003 18:10:55
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

CH11


Ref Lvl
20.5 dBm
0.5 dB Offset
Marker 1 [T1]
-6.05 dBm
2.46239579 GHz
RBW 3 kHz
VBW 30 kHz
SWT 500 s
RF Att 30 dB
Unit dBm
1MA
Span 1.5 MHz
150 kHz/
Center 2.462403307 GHz
Date: 24.MAR.2003 18:15:18
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100KHz Resolution Bandwidth).

4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	July 24, 2003

NOTE:
The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100 kHz with suitable frequency span including 100 kHz bandwidth from band edge. The band edges was measured and recorded.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

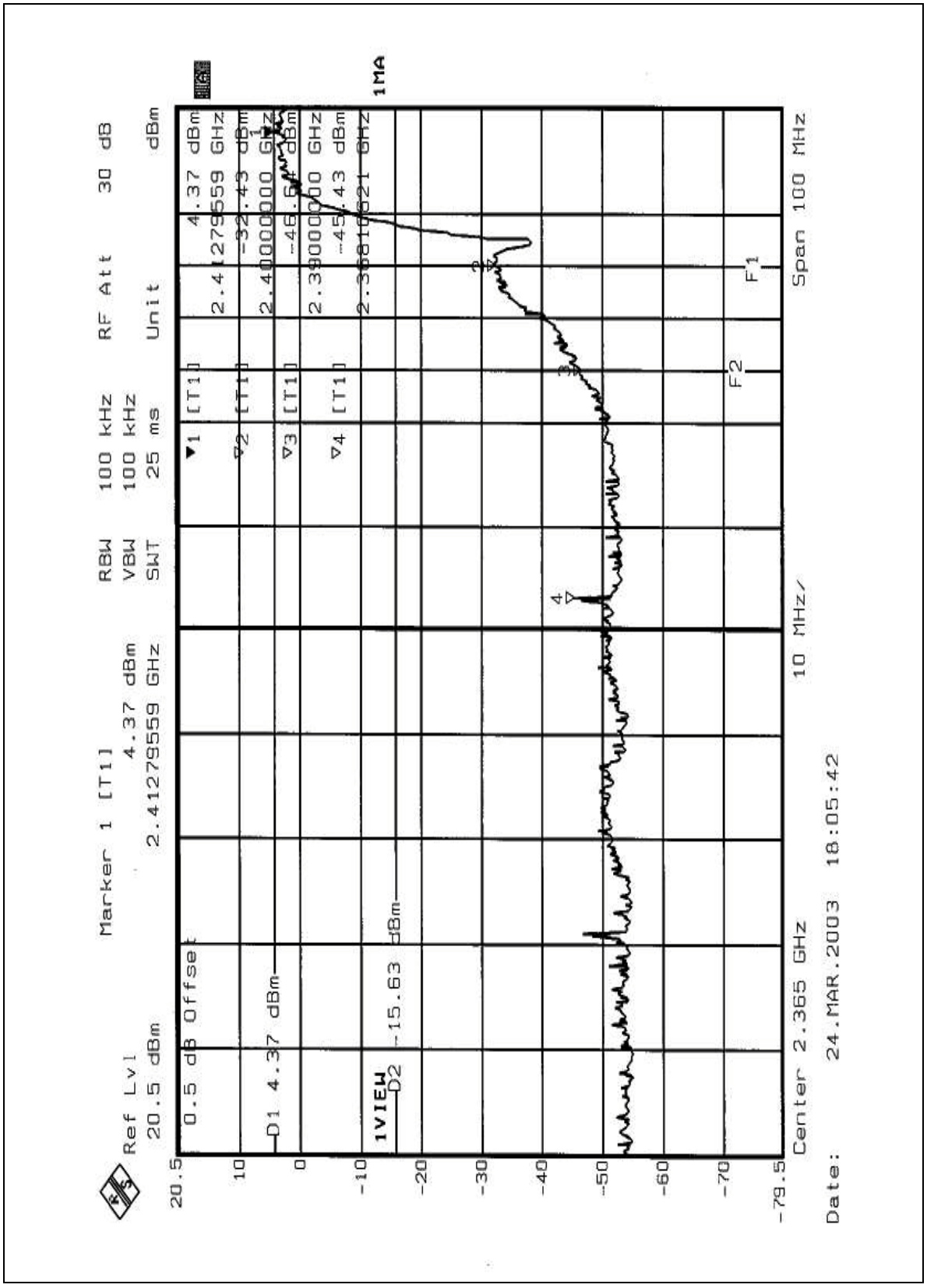
Same as Item 4.3.6

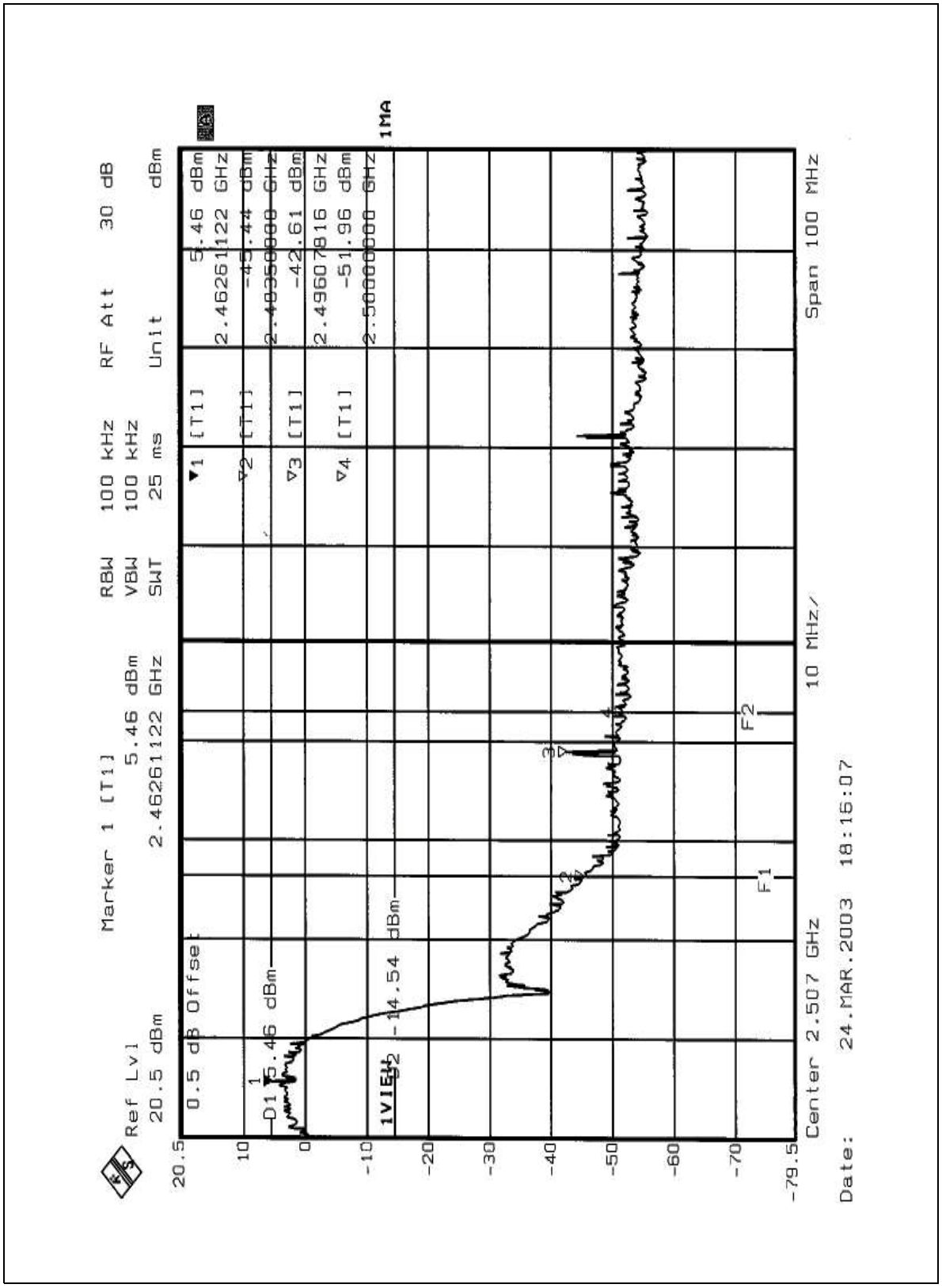
4.6.6 TEST RESULTS

The spectrum plots are attached on the following 2 pages. D2 line indicates the highest level, and D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

NOTE:

The band edge emission plot on the following pages shows 49.8dB / 48.07dB delta between carrier maximum power and local maximum emission in restrict band (2.3681GHz / 2.4961GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 (page 27) is 100.3dBuV/m, so the maximum field strength in restrict band is 100.3-49.8=50.5dBuV/m which is under 54dBuV/m limit.


Marker 1 [T1]
4.37 dBm
2.41279559 GHz
RBW 100 kHz
VBW 100 kHz
SWT 25 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20.5 dBm
0.5 dB Offset
D1 4.37 dBm
1VIEW
D2 -15.63 dBm
1MA
Center 2.365 GHz
10 MHz/
Span 100 MHz
Date: 24.MAR.2003 18:05:42


Marker 1 [T1]
5.46 dBm
2.46261122 GHz
RBW 100 kHz
VBW 100 kHz
SWT 25 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20.5 dBm
0.5 dB Offset
D1 -5.46 dBm
1VIEW -14.54 dBm
1 [T1] 5.46 dBm 2.46261122 GHz
2 [T1] -45.44 dBm 2.48350800 GHz
3 [T1] -42.61 dBm 2.49607816 GHz
4 [T1] -51.96 dBm 2.50000000 GHz
1MA
Center 2.507 GHz
Span 100 MHz
10 MHz/
Date: 24.MAR.2003 18:15:07

4.7 ANTENNA REQUIREMENT

4.7.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.7.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is PIFA Antenna with UFL connector. The maximum Gain of the antenna is 1dBi.

5. TEST TYPES AND RESULTS (FOR PART 802.11a)

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

NOTE:
1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS30	847793/022	Mar. 10, 2004
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH2-Z5	828075/003	July 23, 2003
ROHDE & SCHWARZ 200-A Four-line V-Network	ENV4200	830326/018	Oct. 30, 2003
* ROHDE & SCHWARZ 4-wire ISN	ENY41	838119/028	Nov. 29, 2003
* ROHDE & SCHWARZ 2-wire ISN	ENY22	837497/018	Nov. 29, 2003
EMCO-L.I.S.N. (for peripheral)	3825/2	90031627	July 23, 2003
Software	Cond-V2M1	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C05.01	July 19, 2003
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-305	Feb. 23, 2004
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-306	Feb. 23, 2004

NOTE:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. "*": These equipment are used for conducted telecom port test only (if tested).
3. The test was performed in ADT Shielded Room No. 5.
4. The VCCI Site Registration No. is C-1093.

5.1.3 TEST PROCEDURES

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

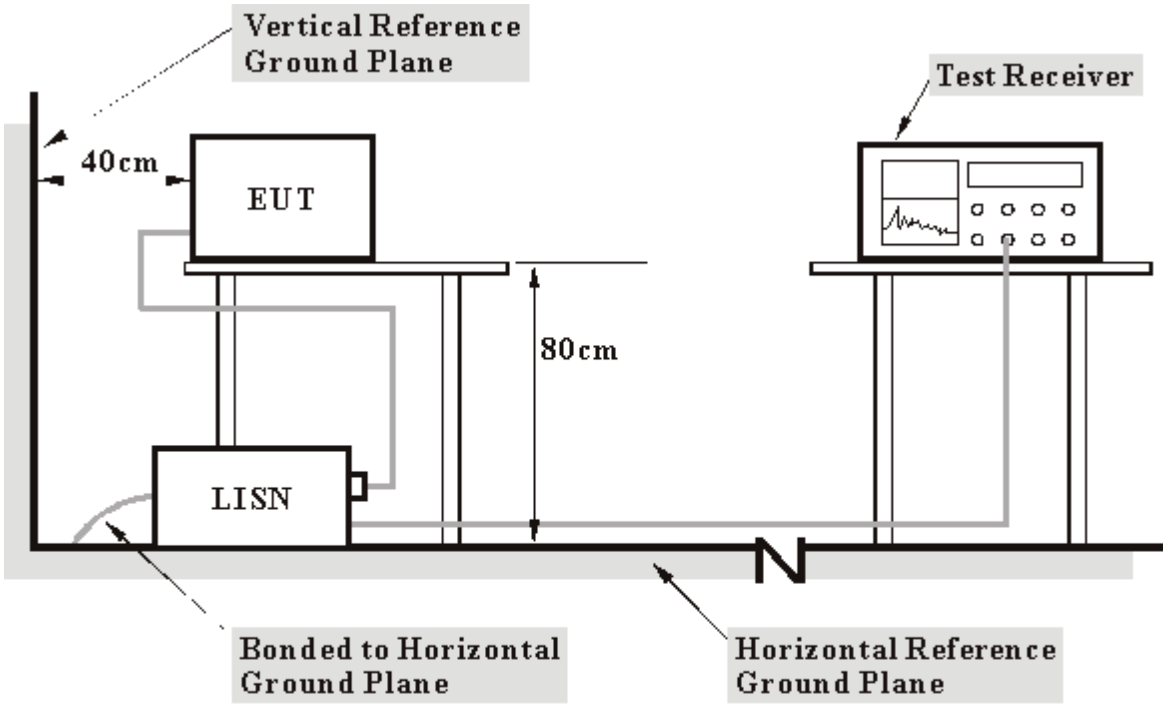
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits could not be reported

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 TEST SETUP



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

5.1.6 EUT OPERATING CONDITIONS

Same as 4.1.6

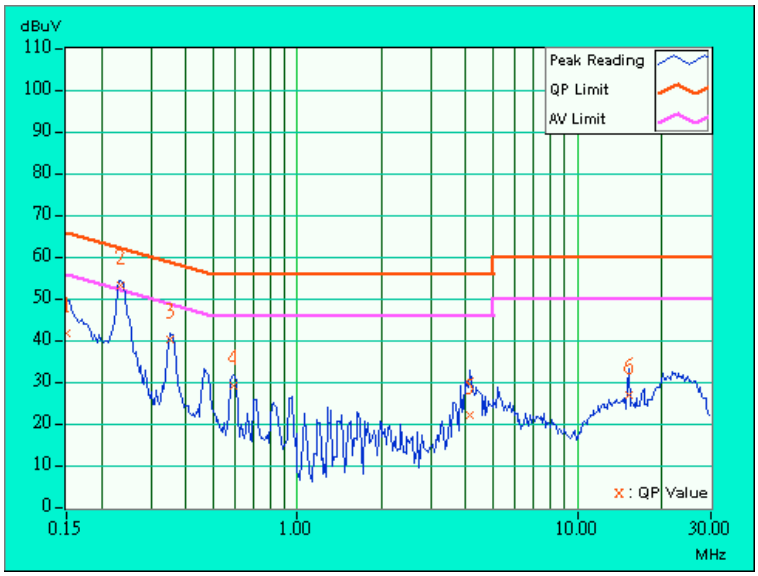
5.1.7 TEST RESULTS

EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
		6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	26deg. C, 50RH, 991 hPa	**TESTED BY**: Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.10	40.98	-	41.08	-	66.00	56.00	-24.92	-
2	0.235	0.10	52.68	41.34	52.78	41.44	62.28	52.28	-9.50	-10.84
3	0.351	0.10	39.54	-	39.64	-	58.94	48.94	-19.30	-
4	0.595	0.13	28.56	-	28.69	-	56.00	46.00	-27.31	-
5	4.137	0.40	21.38	-	21.78	-	56.00	46.00	-34.22	-
6	15.289	0.82	26.38	-	27.20	-	60.00	50.00	-32.80	-

NOTE:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.

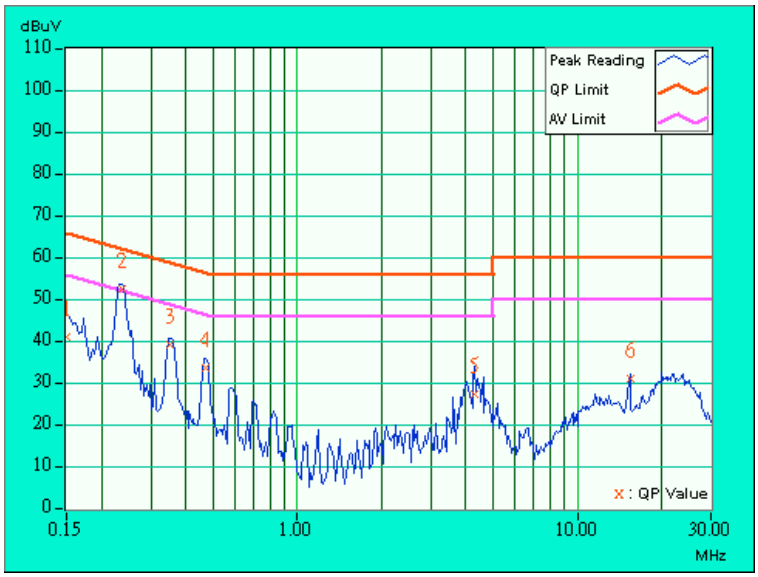


EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
		6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	26deg. C, 50RH, 991 hPa	**TESTED BY**: Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.10	40.64	-	40.74	-	66.00	56.00	-25.26	-
2	0.236	0.10	51.92	-	52.02	-	62.24	52.24	-10.22	-
3	0.352	0.10	38.81	-	38.91	-	58.92	48.92	-20.01	-
4	0.470	0.11	33.34	-	33.45	-	56.51	46.51	-23.06	-
5	4.316	0.31	27.03	-	27.34	-	56.00	46.00	-28.66	-
6	15.434	0.53	30.66	-	31.19	-	60.00	50.00	-28.81	-

NOTE:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



5.2 RADIATED EMISSION MEASUREMENT

5.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

5.2.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

Frequencies (MHz)	EIRP Limit (dBm)	Equivalent Field Strength at 3m (dBμV/m) *note 3
5150~5250	-27	67.05
5250~5350	-27	67.05
5725~5825	-27 *note 1	67.05
	-17 *note 2	77.05

NOTE:

1. For frequencies 10MHz or greater above or below the band edge.
2. All emissions within the frequency range from the band edge to 10MHz above or below the band edge.
3. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength

$$E=\frac{\sqrt{30PG}}{d},$$

where P is the eirp (Watts).

d is the distance in meters between the two antennas.

G is the antenna numerical gain referenced to isotropic gain.

5.2.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
* HP Spectrum Analyzer	8590L	3544A01176	May 13, 2003
* HP Preamplifier	8447D	2944A08485	Apr. 29, 2003
* HP Preamplifier	8449B	3008A01201	Dec. 01, 2003
* HP Preamplifier	8449B	3008A01292	Aug. 07, 2003
*Spectrum Analyzer	8593E	3926A04191	Mar. 24, 2004
*Test Receiver	ESI7	838496/016	Feb. 23, 2004
SCHAFFNER Tunable Dipole Antenna SCHWARZBECK Tunable Dipole Antenna	VHBA 9123 UHA 9105	459 977	Nov. 22, 2003
* CHASE BILOG Antenna	CBL6112A	2221	Aug. 02, 2003
* SCHWARZBECK Horn Antenna	BBHA9120-D1	D130	July 03, 2003
* EMCO Horn Antenna	3115	9312-4192	Apr. 09, 2003
* EMCO Turn Table	1060	1115	NA
* SHOSHIN Tower	AP-4701	A6Y005	NA
* Software	ADT_Radiated_V5.09	NA	NA
* ANRITSU RF Switches	MP59B	M35046	Jul. 11. 2003
* TIMES RF cable	LMR-600	CABLE-ST5-01	Jul. 11. 2003

NOTE: 1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. "*" = These equipment are used for the final measurement.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The test was performed in ADT Open Site No. 5.
5. The VCCI Site Registration No. is R-1039.

5.2.4 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

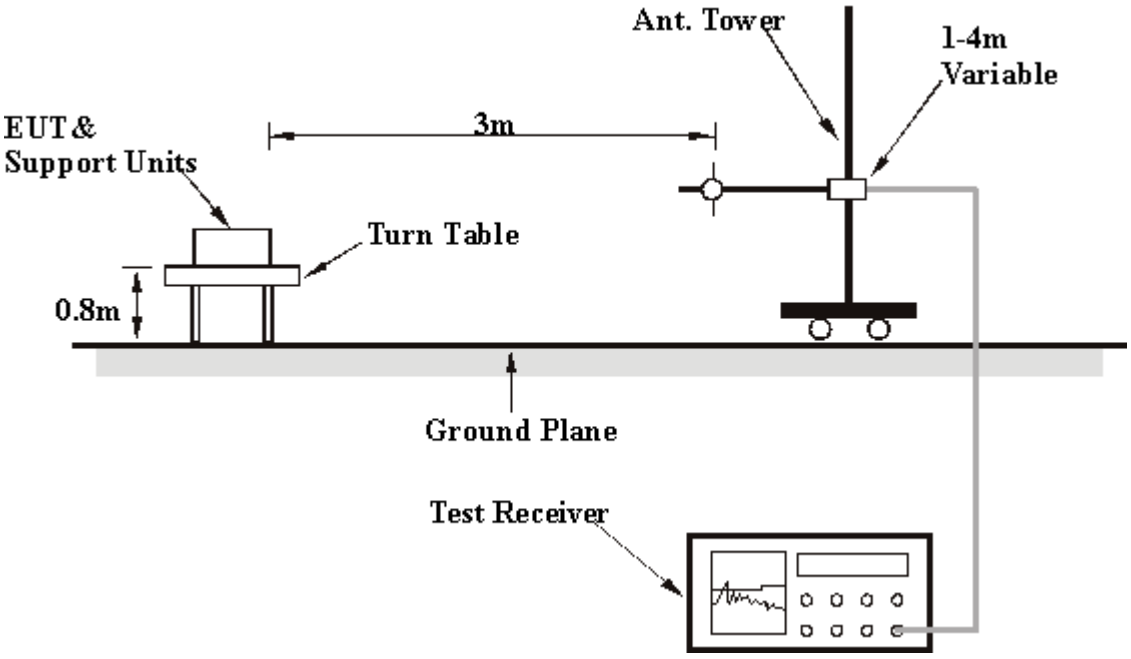
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 300 Hz for Average detection (AV) at frequency above 1GHz.

5.2.5 DEVIATION FROM TEST STANDARD

No deviation

5.2.6 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

5.2.7 EUT OPERATING CONDITIONS

Same as 4.1.6

5.2.8 TEST RESULTS

EUT	2.4GHz/5GHz Mini - PCI Card	MODEL	WLL220
FREQUENCY RANGE	Below 1000MHz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24 deg. C, 70%RH, 991 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Bunny Yao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	223.00	30.0 QP	46.00	-16.00	1.24 H	50	16.90	13.10
2	288.00	30.3 QP	46.00	-15.70	1.22 H	344	13.70	16.60
3	320.00	30.3 QP	46.00	-15.70	1.68 H	45	13.20	17.10
4	384.00	28.9 QP	46.00	-17.10	1.05 H	53	10.20	18.70
5	528.00	26.0 QP	46.00	-20.00	1.20 H	135	4.90	21.10
6	625.00	30.0 QP	46.00	-16.00	1.33 H	245	7.20	22.80
7	746.50	30.1 QP	46.00	-15.90	1.60 H	4	6.00	24.10

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

EUT	2.4GHz/5GHz Mini - PCI Card	MODEL	WLL220
FREQUENCY RANGE	Below 1000MHz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24 deg. C, 70%RH, 991 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Bunny Yao		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	288.00	30.4 QP	46.00	-15.60	1.24 V	50	13.80	16.60
2	320.00	30.4 QP	46.00	-15.60	1.07 V	65	13.20	17.10
3	384.00	28.6 QP	46.00	-17.40	1.69 V	34	9.90	18.70
4	433.00	31.2 QP	46.00	-14.80	1.76 V	288	11.70	19.50
5	529.00	30.5 QP	46.00	-15.50	1.64 V	147	9.40	21.10
6	625.00	34.0 QP	46.00	-12.00	1.85 V	248	11.20	22.80
7	745.00	27.4 QP	46.00	-18.60	1.36 V	130	3.40	24.00

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Normal Mode	**CHANNEL**	1
FREQUENCY RANGE	Above 1000 MHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26 deg. C, 67%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
TESTED BY	Bunny Yao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	65.6 PK	74.00	-8.40	1.12 H	50	29.70	35.90
1	5150.00	50.1 AV	54.00	-3.90	1.12 H	50	14.20	35.90
2	*5180.00	103.0 PK			1.24 H	65	67.10	35.90
2	*5180.00	94.0 AV			1.24 H	65	58.10	35.90
3	10360.00	56.0 PK	67.05	-11.05	1.87 H	45	11.60	44.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	66.1 PK	74.00	-7.90	1.44 V	265	30.20	35.90
1	5150.00	50.8 AV	54.00	-3.20	1.44 V	265	14.90	35.90
2	*5180.00	103.2 PK			1.44 V	265	67.30	35.90
2	*5180.00	94.3 AV			1.44 V	265	58.40	35.90
3	10360.00	56.9 PK	67.05	-10.15	1.10 V	185	12.50	44.40

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “*” : Fundamental frequency

EUT	2.4GHz/5GHz Mini - PCI Card	MODEL	WLL220
MODE	Normal Mode	CHANNEL	4
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26 deg. C, 67%RH, 991 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Bunny Yao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	113.3 PK			1.74 H	60	77.30	36.00
1	*5240.00	95.7 AV			1.74 H	60	59.70	36.00
2	10480.00	58.3 PK	67.05	-8.75	1.23 H	20	13.60	44.70
3	#15720.00	57.6 PK	74.00	-16.40	1.26 H	6	10.60	46.90
3	#15720.00	47.2 AV	54.00	-6.80	1.26 H	6	0.20	46.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	104.9 PK			1.55 V	64	68.90	36.00
1	*5240.00	96.2 AV			1.55 V	64	60.20	36.00
2	10480.00	58.8 PK	67.05	-8.25	1.25 V	115	14.10	44.70
3	#15720.00	58.5 PK	74.00	-15.50	1.80 V	254	11.50	46.90
3	#15720.00	48.8 AV	54.00	-5.20	1.80 V	254	1.80	46.90

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "*" : Fundamental frequency
6. "# " : The radiated frequency falling in the restricted band.

EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Normal Mode	**CHANNEL**	5
FREQUENCY RANGE	Above 1000 MHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26 deg. C, 67%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
TESTED BY	Bunny Yao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5260.00	105.3 PK			1.48 H	168	69.20	36.00
1	*5260.00	96.5 AV			1.48 H	168	60.40	36.00
2	10520.00	58.8 PK	67.05	-8.25	1.96 H	41	14.00	44.70
3	#15780.00	58.7 PK	74.00	-15.30	1.58 H	66	11.70	47.00
3	#15780.00	47.8 AV	54.00	-6.20	1.58 H	66	0.80	47.00

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5260.00	105.2 PK			1.20 V	22	69.10	36.00
1	*5260.00	96.7 AV			1.20 V	22	60.60	36.00
2	10520.00	57.2 PK	67.05	-9.85	1.67 V	341	12.40	44.70
3	#15780.00	60.4 PK	74.00	-13.60	1.12 V	12	13.40	47.00
3	#15780.00	49.0 AV	54.00	-5.00	1.12 V	12	2.00	47.00

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "*" : Fundamental frequency
6. "# " : The radiated frequency falling in the restricted band.

EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Normal Mode	**CHANNEL**	8
FREQUENCY RANGE	Above 1000 MHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26 deg. C, 67%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
TESTED BY	Bunny Yao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5230.00	102.3 PK			1.47 H	22	66.20	36.10
1	*5230.00	93.8 AV			1.47 H	22	57.70	36.10
2	#5350.00	65.2 PK	74.00	-8.80	1.47 H	22	29.00	36.20
2	#5350.00	51.0 AV	54.00	-3.00	1.47 H	22	14.80	36.20
3	#10640.00	56.7 PK	74.00	-17.30	1.11 H	237	11.80	44.80
3	#10640.00	46.5 AV	54.00	-7.50	1.11 H	237	1.60	44.80

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5230.00	101.7 PK			1.46 V	247	65.70	36.00
1	*5230.00	93.2 AV			1.46 V	247	57.20	36.00
2	#5350.00	65.0 PK	74.00	-9.00	1.46 V	247	28.80	36.20
2	#5350.00	50.1 AV	54.00	-3.90	1.46 V	247	13.90	36.20
3	#10640.00	57.4 PK	74.00	-16.60	1.85 V	24	12.50	44.80
3	#10640.00	46.7 AV	54.00	-7.30	1.85 V	24	1.80	44.80

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "*" : Fundamental frequency
6. "# " : The radiated frequency falling in the restricted band.

EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Normal Mode	**CHANNEL**	9
FREQUENCY RANGE	Above 1000 MHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26 deg. C, 67%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
TESTED BY	Bunny Yao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5715.00	62.9 PK	67.05	-4.15	1.60 H	125	26.30	36.60
2	5725.00	74.8 PK	77.05	-2.25	1.60 H	125	38.20	36.60
3	*5745.00	100.2 PK			1.66 H	125	63.60	36.60
3	*5745.00	91.7 AV			1.66 H	125	55.10	36.60
4	#11490.00	58.3 PK	74.00	-15.70	1.88 H	314	13.40	44.90
4	#11490.00	47.2 AV	54.00	-6.80	1.88 H	314	2.30	44.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5715.00	63.6 PK	67.05	-3.45	1.10 V	31	27.00	36.60
2	5725.00	75.4 PK	77.05	-1.65	1.10 V	31	38.80	36.60
3	*5745.00	100.6 PK			1.07 V	31	64.00	36.60
3	*5745.00	92.4 AV			1.07 V	31	55.80	36.60
4	#11490.00	55.7 PK	74.00	-18.30	1.41 V	248	10.80	44.90
4	#11490.00	46.1 AV	54.00	-7.90	1.41 V	248	1.20	44.90

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "*" : Fundamental frequency
6. "# " : The radiated frequency falling in the restricted band.

EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Normal Mode	**CHANNEL**	12
FREQUENCY RANGE	Above 1000 MHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26 deg. C, 67%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
TESTED BY	Bunny Yao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5805.00	101.1 PK			1.55 H	94	64.40	36.70
1	*5805.00	92.7 AV			1.55 H	94	56.00	36.70
2	5825.00	73.3 PK	77.05	-3.75	1.48 H	91	36.60	36.70
3	5835.00	64.3 PK	67.05	-2.75	1.48 H	91	27.60	36.70
4	#11610.00	55.5 PK	74.00	-18.50	1.48 H	184	10.50	44.90
4	#11610.00	45.7 AV	54.00	-8.30	1.48 H	184	0.70	44.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5805.00	101.5 PK			1.23 V	12	64.80	36.70
1	5805.00	93.3 AV			1.23 V	12	56.60	36.70
2	5825.00	74.2 PK	77.05	-2.85	1.20 V	20	37.50	36.70
3	5835.00	64.8 PK	67.05	-2.25	1.20 V	20	28.10	36.70
4	#11610.00	54.6 PK	74.00	-19.40	1.60 V	222	9.60	44.90
4	#11610.00	44.7 AV	54.00	-9.30	1.60 V	222	-0.30	44.90

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "*" : Fundamental frequency
6. "# " : The radiated frequency falling in the restricted band.

EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Turbo Mode	**CHANNEL**	1
FREQUENCY RANGE	Above 1000 MHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26 deg. C, 67%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
TESTED BY	Bunny Yao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5210.00	99.7 PK			1.25 H	30	63.70	36.00
1	*5210.00	91.3 AV			1.25 H	30	55.30	35.90
2	10420.00	55.4 PK	67.05	-11.65	1.77 H	348	10.90	44.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5150.00	61.6 PK	74.00	-12.40	1.58 V	30	25.70	35.90
1	#5150.00	51.7 AV	54.00	-2.30	1.58 V	30	15.80	35.90
2	*5210.00	100.3 PK			1.58 V	30	64.30	36.00
2	*5210.00	91.9 AV			1.58 V	30	55.90	36.00
3	10420.00	55.8 PK	67.05	-11.25	1.14 V	132	11.30	44.60

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "*" : Fundamental frequency
6. "# " : The radiated frequency falling in the restricted band.

EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Turbo Mode	**CHANNEL**	2
FREQUENCY RANGE	Above 1000 MHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26 deg. C, 67%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
TESTED BY	Bunny Yao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5250.00	99.4 PK			1.40 H	45	63.40	36.00
1	*5250.00	91.3 AV			1.40 H	45	55.30	36.00
2	10500.00	57.6 PK	67.05	-9.45	1.12 H	240	12.90	44.70

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5250.00	101.1 PK			1.42 V	36	65.10	36.00
1	*5250.00	92.9 AV			1.42 V	36	56.90	36.00
2	10500.00	55.9 PK	67.05	-11.15	1.58 V	357	11.20	44.70

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "*" : Fundamental frequency

EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Turbo Mode	**CHANNEL**	3
FREQUENCY RANGE	Above 1000 MHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26 deg. C, 67%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
TESTED BY	Bunny Yao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5290.00	100.8 PK			1.06 H	83	64.70	36.10
1	*5290.00	92.7 AV			1.06 H	83	56.60	36.10
2	#5350.00	60.5 PK	74.00	-13.50	1.06 H	84	24.30	36.20
2	#5350.00	50.0 AV	54.00	-4.00	1.06 H	84	13.80	36.20
3	10580.00	54.9 PK	67.05	-12.15	1.74 H	291	10.10	44.80

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5290.00	100.9 PK			1.34 V	56	64.80	36.10
1	*5290.00	92.6 AV			1.34 V	56	56.50	36.10
2	#5350.00	59.1 PK	74.00	-14.90	1.34 V	56	22.90	36.20
2	#5350.00	49.0 AV	54.00	-5.00	1.34 V	56	12.80	36.20
3	10580.00	56.2 PK	67.05	-10.85	1.47 V	44	11.40	44.80

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "*" : Fundamental frequency
6. "# " : The radiated frequency falling in the restricted band.

EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Turbo Mode	**CHANNEL**	4
FREQUENCY RANGE	Above 1000 MHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26 deg. C, 67%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
TESTED BY	Bunny Yao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5715.00	65.8 PK	67.05	-1.25	1.39 H	49	29.20	36.60
2	5725.00	74.6 PK	77.05	-2.45	1.39 H	49	38.00	36.60
3	*5760.00	99.0 PK			1.39 H	49	62.40	36.70
3	*5760.00	90.6 AV			1.39 H	49	54.00	36.70
4	#11520.00	56.8 PK	74.00	-17.20	1.17 H	4	11.90	44.90
4	#11520.00	45.7 AV	54.00	-8.30	1.17 H	4	0.80	44.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5715.00	65.5 PK	67.05	-1.55	1.44 V	99	28.90	36.60
2	5725.00	74.2 PK	77.05	-2.85	1.39 V	99	37.60	36.60
3	*5760.00	98.3 PK			1.39 V	99	61.70	36.70
3	*5760.00	90.2 AV			1.39 V	99	53.60	36.70
4	#11520.00	55.0 PK	74.00	-19.00	1.73 V	167	10.10	44.90
4	#11520.00	45.5 AV	54.00	-8.50	1.73 V	167	0.60	44.90

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "*" : Fundamental frequency
6. "# " : The radiated frequency falling in the restricted band.

EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Turbo Mode	**CHANNEL**	5
FREQUENCY RANGE	Above 1000 MHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26 deg. C, 67%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
TESTED BY	Bunny Yao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5800.00	94.0 PK			1.13 H	35	57.30	36.70
1	*5800.00	84.9 AV			1.13 H	35	48.20	36.70
2	5825.00	69.8 PK	77.05	-7.25	1.23 H	44	33.10	36.70
3	5835.00	61.2 PK	67.05	-5.85	1.20 H	41	24.50	36.70
4	#11600.00	53.1 PK	74.00	-20.90	1.84 H	45	8.10	44.90
4	#11600.00	43.9 AV	54.00	-10.10	1.84 H	45	-1.10	44.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5800.00	97.3 PK			1.58 V	231	60.60	36.70
1	*5800.00	87.3 AV			1.58 V	231	50.60	36.70
2	5825.00	72.2 PK	77.05	-4.85	1.58 V	231	35.50	36.70
3	5835.00	63.6 PK	67.05	-3.45	-1.80	231	26.90	36.70
4	#11600.00	54.6 PK	74.00	-19.40	1.78 V	336	9.60	44.90
4	#11600.00	44.5 AV	54.00	-9.50	1.78 V	336	-0.50	44.90

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "*" : Fundamental frequency
6. "# " : The radiated frequency falling in the restricted band.

5.3 PEAK TRANSMIT POWER MEASUREMENT

5.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

Frequency Band	Limit
5.15 – 5.25 GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.25 – 5.35 GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.725 – 5.825 GHz	The lesser of 1W (30dBm) or 17dBm + 10logB

Note: Where B is the 26dB emission bandwidth in MHz.

5.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	July 24, 2003

NOTE:
The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

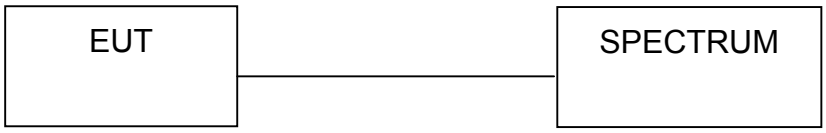
5.3.3 TEST PROCEDURE

2. The transmitter output was connected to the spectrum analyzer.
3. Set span to encompass the entire emission bandwidth of the signal.
4. Set RBW to 1MHz, VBW to 300kHz.
5. Using the spectrum analyzer's channel power measurement function to measure the output power.

5.3.4 DEVIATION FROM TEST STANDARD

No deviation

5.3.5 TEST SETUP



5.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

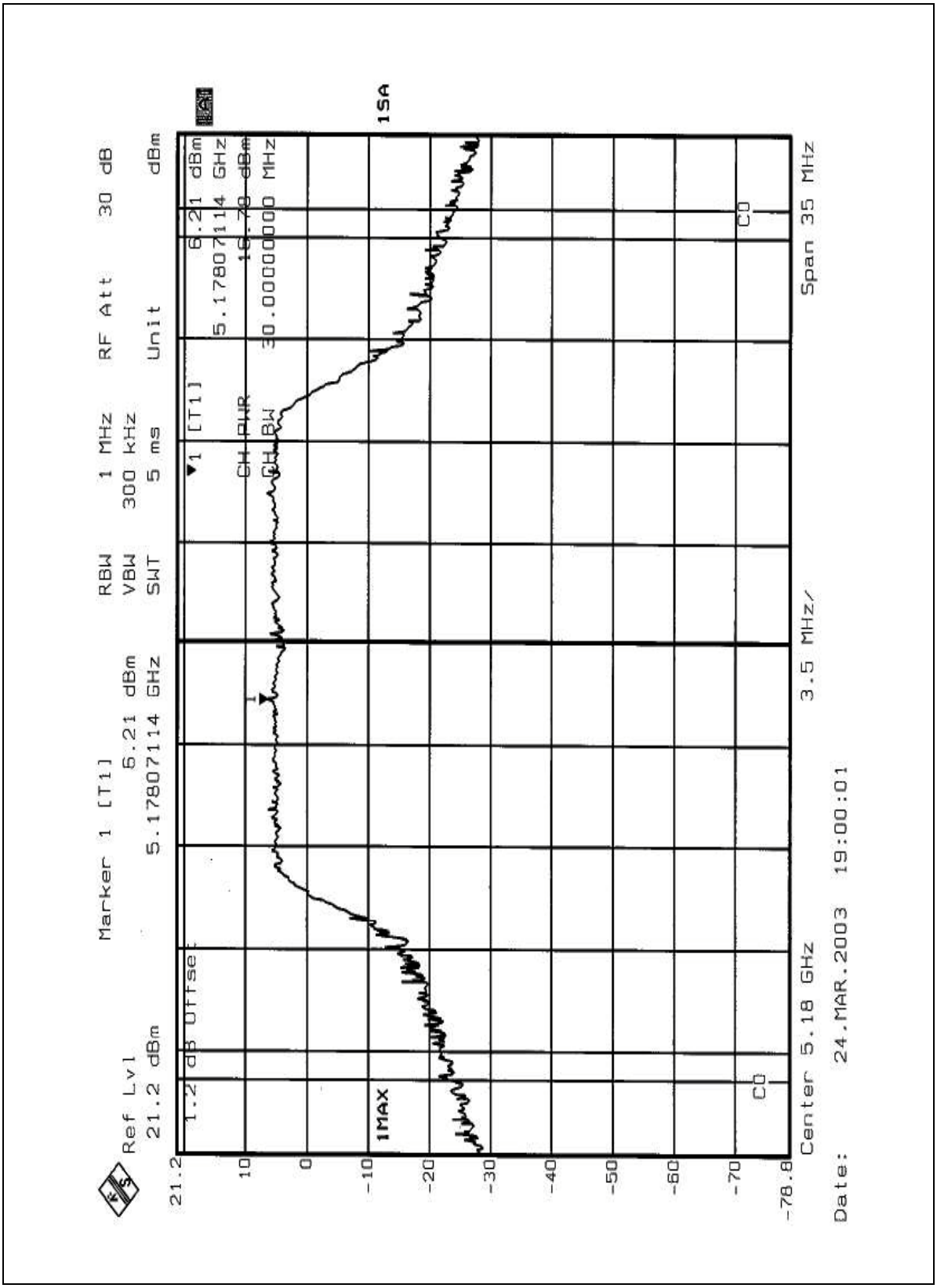
5.3.7 TEST RESULTS

EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Normal	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	19deg. C, 69RH, 991 hPa	**TESTED BY**	Ansen Lei

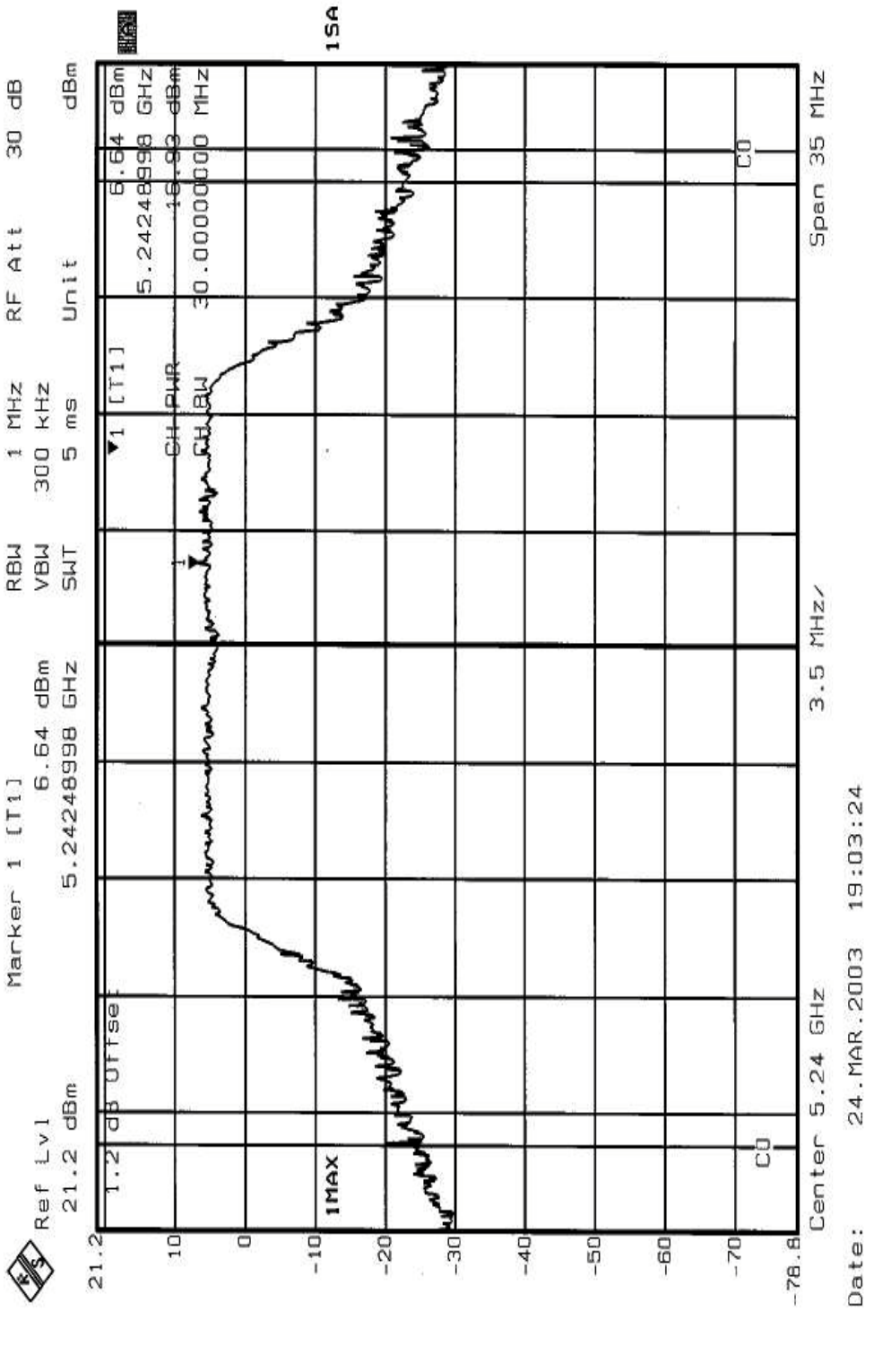
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5180	16.78	17.00	28.27	PASS
4	5240	16.93	17.00	28.83	PASS
5	5260	22.51	24.00	27.99	PASS
8	5320	22.37	24.00	28.69	PASS
9	5745	17.08	30.00	30.37	PASS
12	5805	18.43	30.00	31.14	PASS

NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

CHANNEL 1


Ref Lvl
21.2 dBm
1.2 dB Offset
Marker 1 [T1]
5.21 dBm
5.17807114 GHz
RBW 1 MHz
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1SA
1MAX
CH PWR
CH BW
Center 5.18 GHz
3.5 MHz/
Span 35 MHz
Date: 24.MAR.2003 19:00:01

CHANNEL 4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21.2 dBm
1.2 dB Offset
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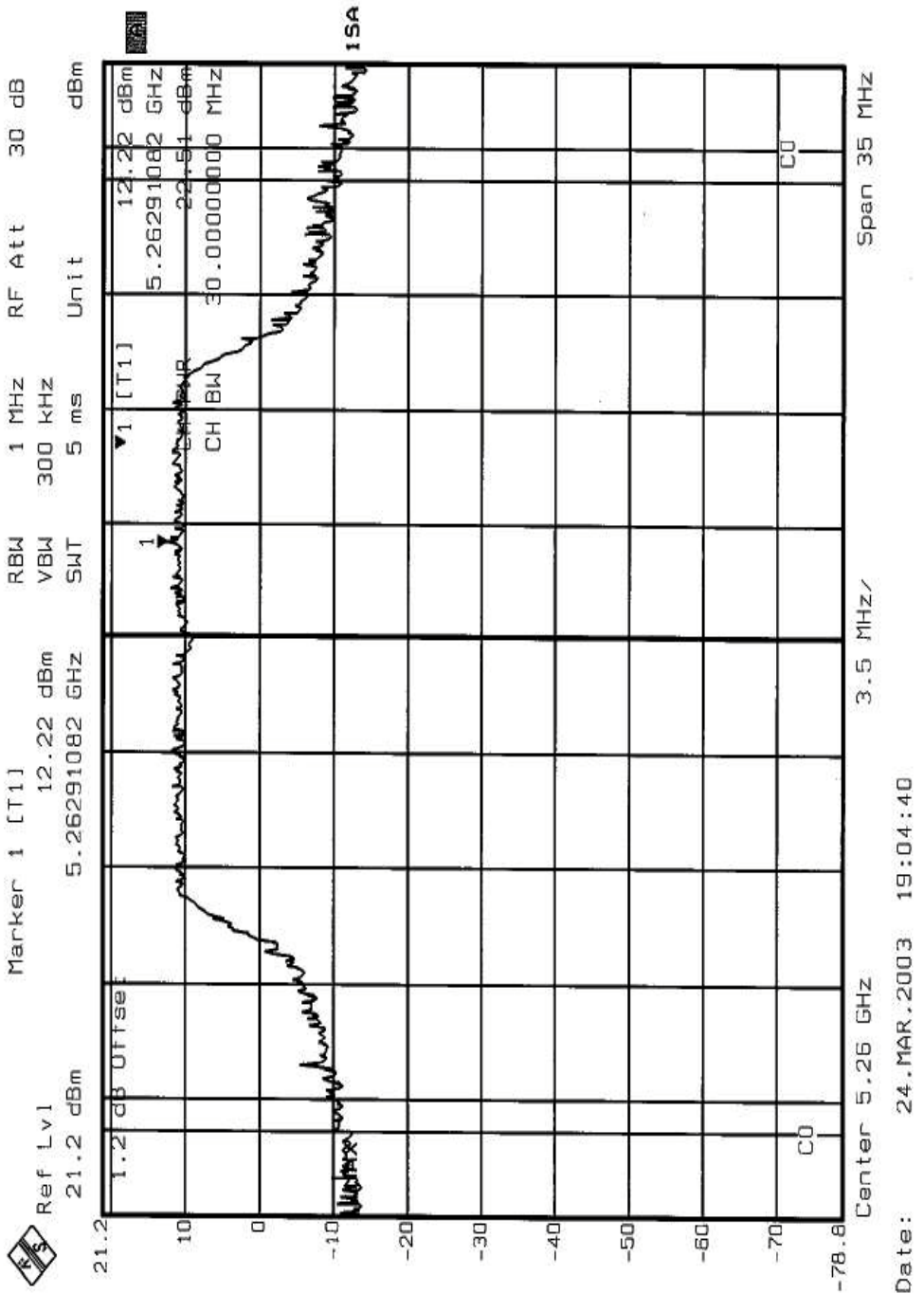
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1SA
1MAX
CH PWR
6.64 dBm
5.24248998 GHz
16.93 dBm
30.000000000 MHz
Center 5.24 GHz
3.5 MHz/
Span 35 MHz
Date: 24.MAR.2003 19:03:24

CHANNEL 5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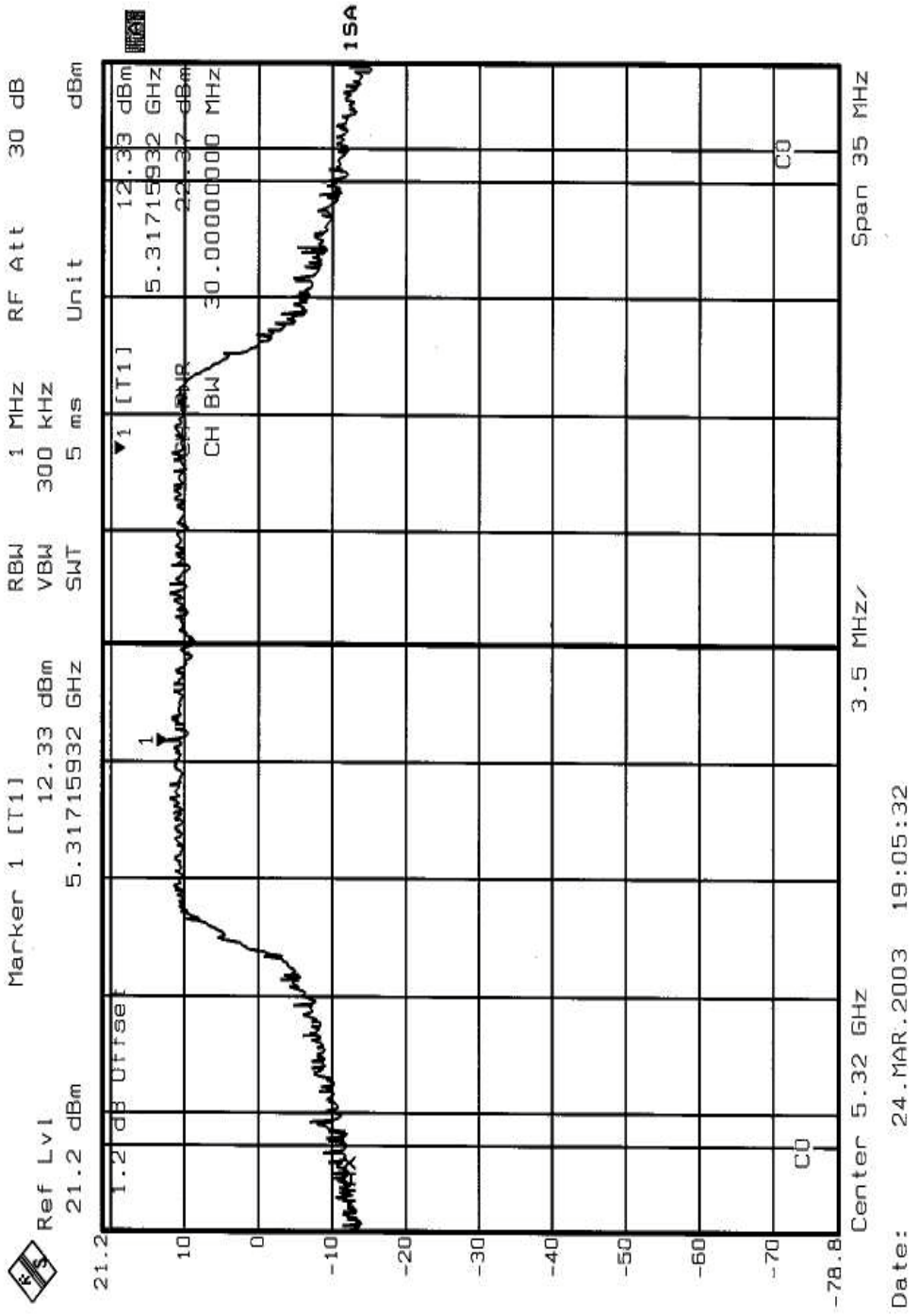
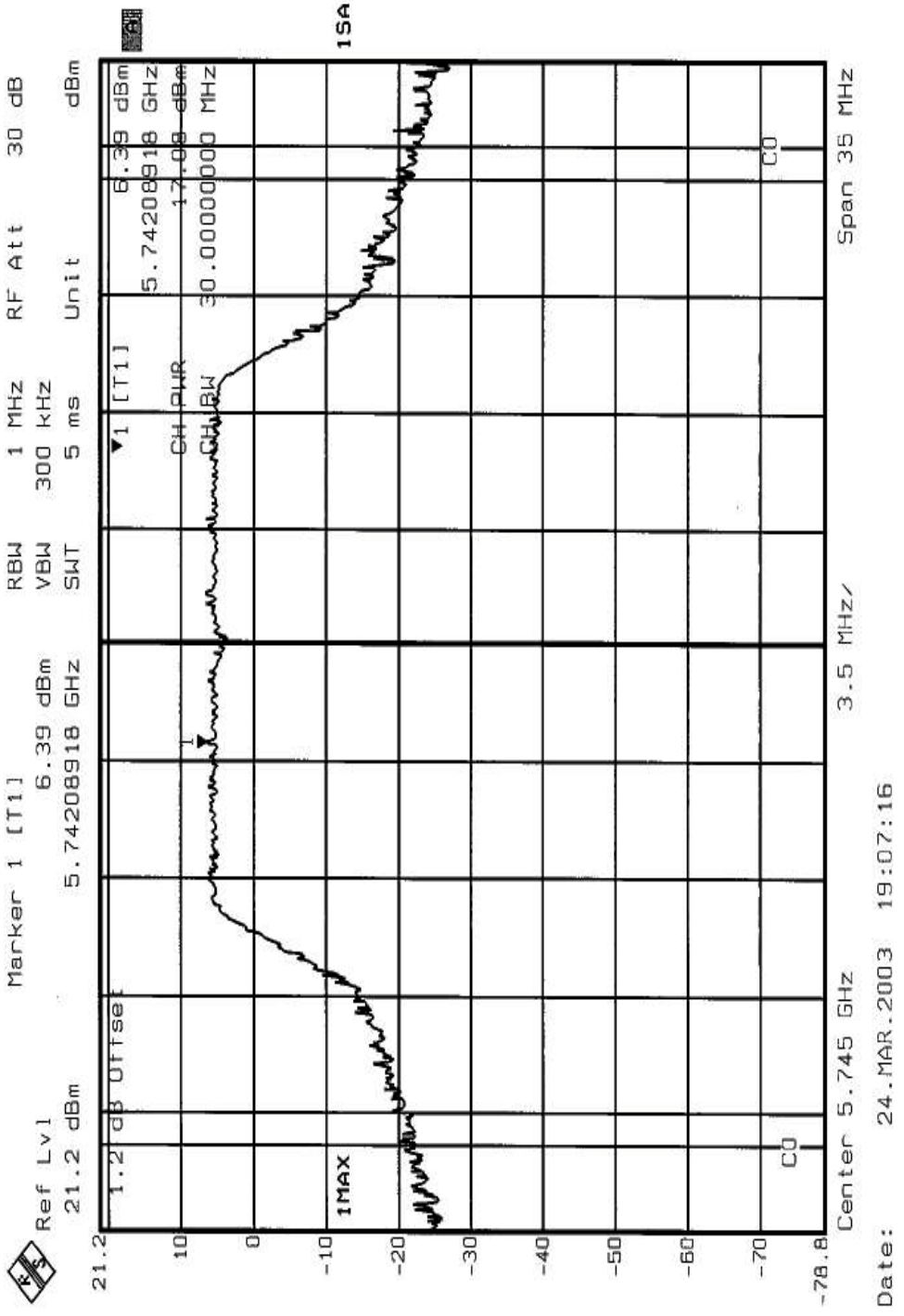
21.2 dBm
1.2 dB Offset
Marker 1 [T1]
12.22 dBm
5.26291082 GHz
RBW 1 MHz
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1 [T1]
12.22 dBm
5.26291082 GHz
CH PWR 22.51 dBm
CH BW 30.000000000 MHz
1SA
CO
Center 5.26 GHz
3.5 MHz/
Span 35 MHz
Date: 24.MAR.2003 19:04:40

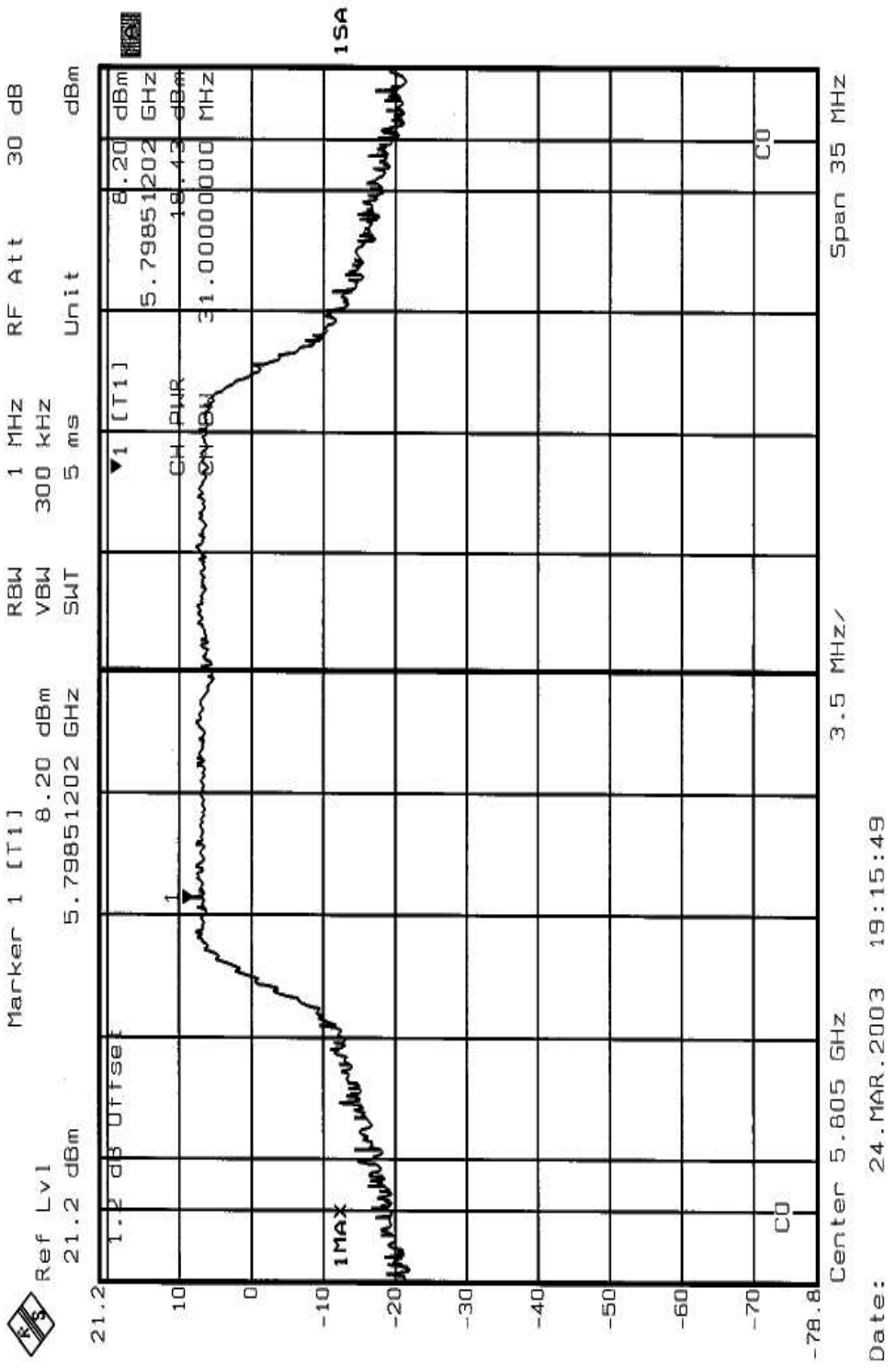
CHANNEL8


Marker 1 [T1]
12.33 dBm
5.31715932 GHz
RBW 1 MHz
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
21.2 dBm
1.2 dB Offset
CH BW
Center 5.32 GHz
3.5 MHz/
Span 35 MHz
Date: 24.MAR.2003 19:05:32

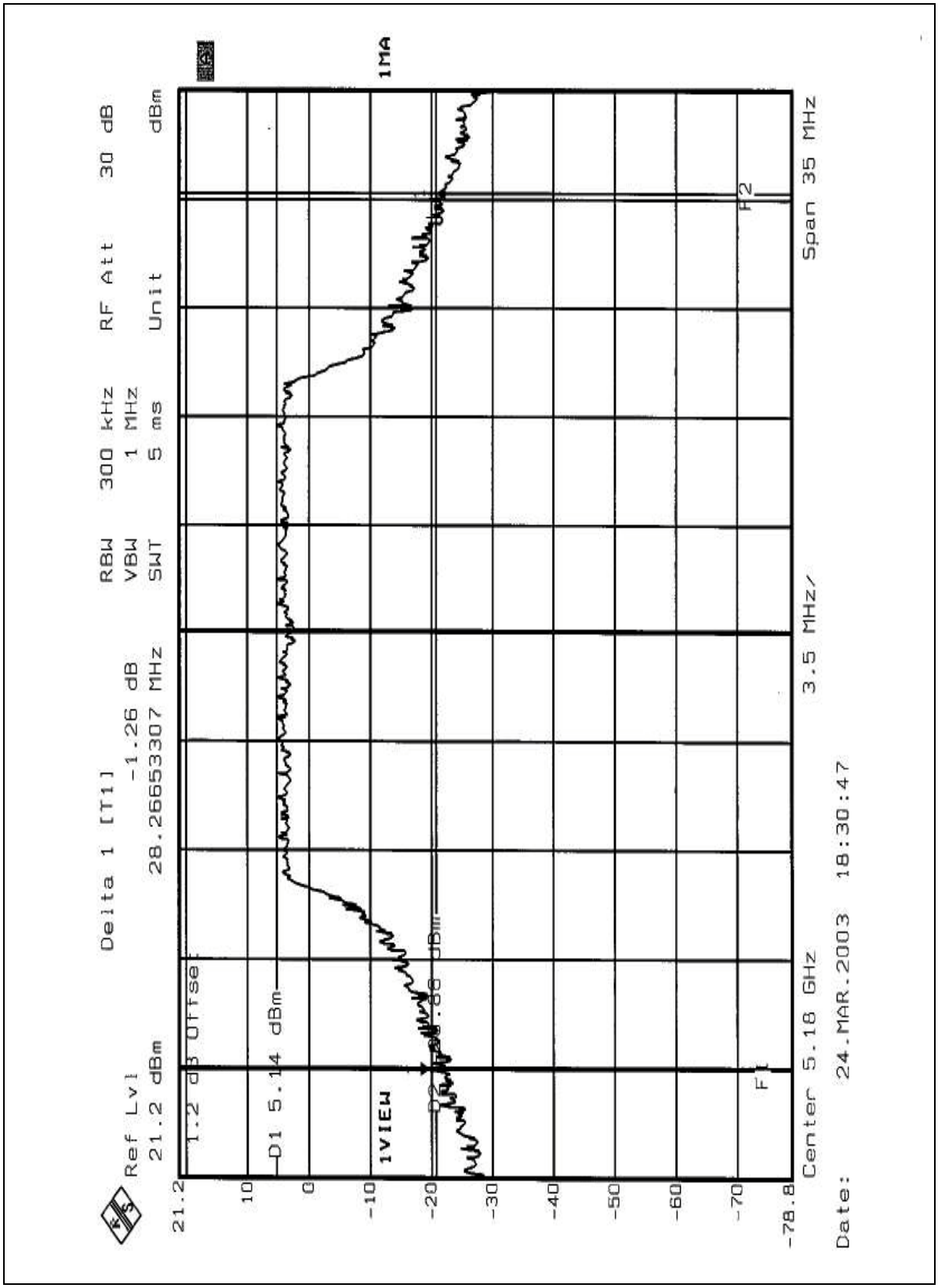
CHANNEL9


Marker 1 [T1]
6.39 dBm
5.74208918 GHz
RBW 1 MHz
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
21.2 dBm
1.2 dB Offset
1SA
1MAX
CO
CH PWR
CH BW
6.39 dBm
5.74208918 GHz
17.08 dBm
30.00000000 MHz
Center 5.745 GHz
3.5 MHz/
Span 35 MHz
Date: 24.MAR.2003 19:07:16

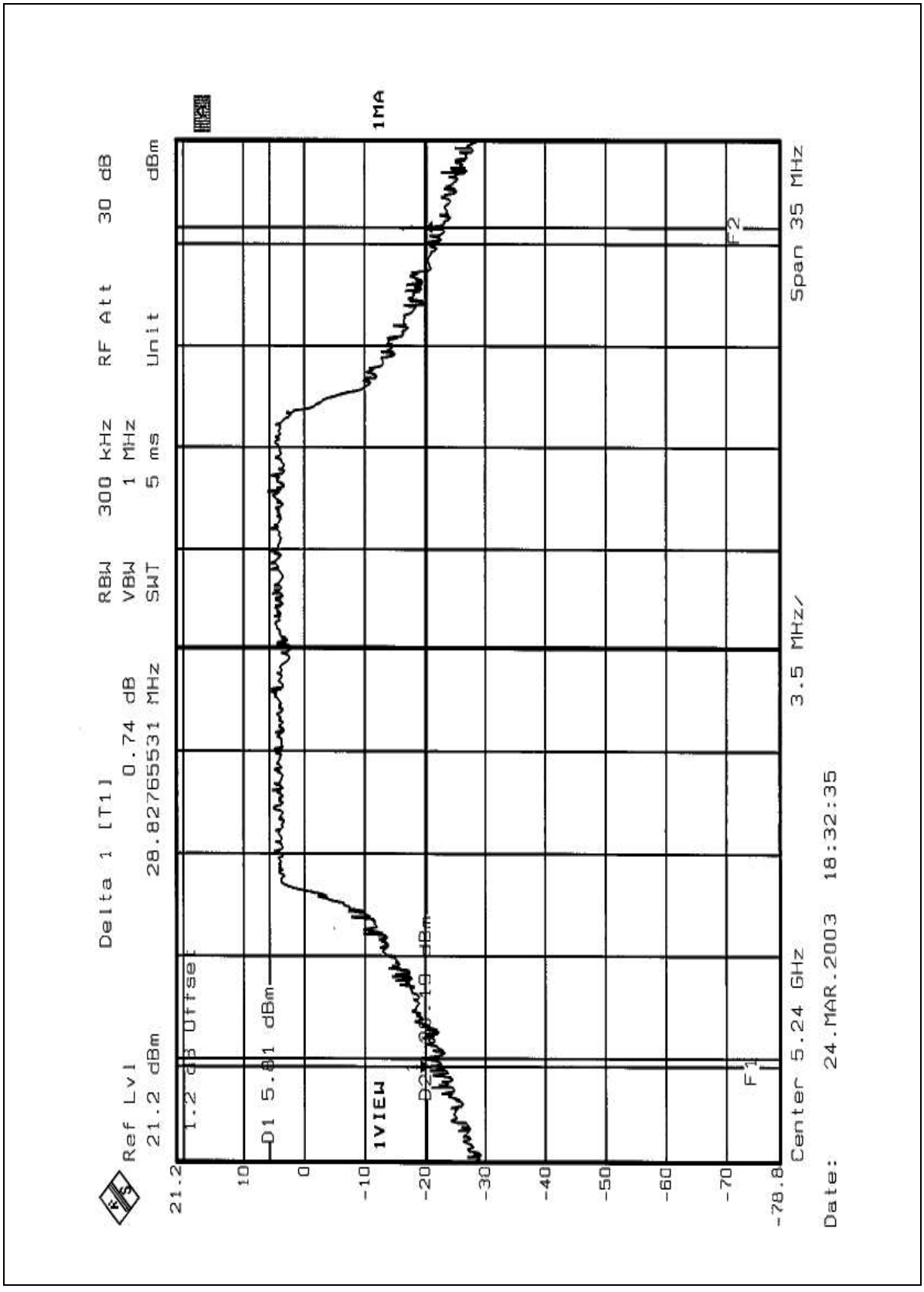
CHANNEL12


Ref Lvl
21.2 dBm
1.2 dB Offset
Marker 1 [T1]
8.20 dBm
5.79851202 GHz
RBW 1 MHz
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1 [T1]
8.20 dBm
5.79851202 GHz
CH PWR 18.43 dBm
CN BW 31.00000000 MHz
1SA
1MAX
CO
Center 5.805 GHz
3.5 MHz/
Span 35 MHz
Date: 24.MAR.2003 19:15:49

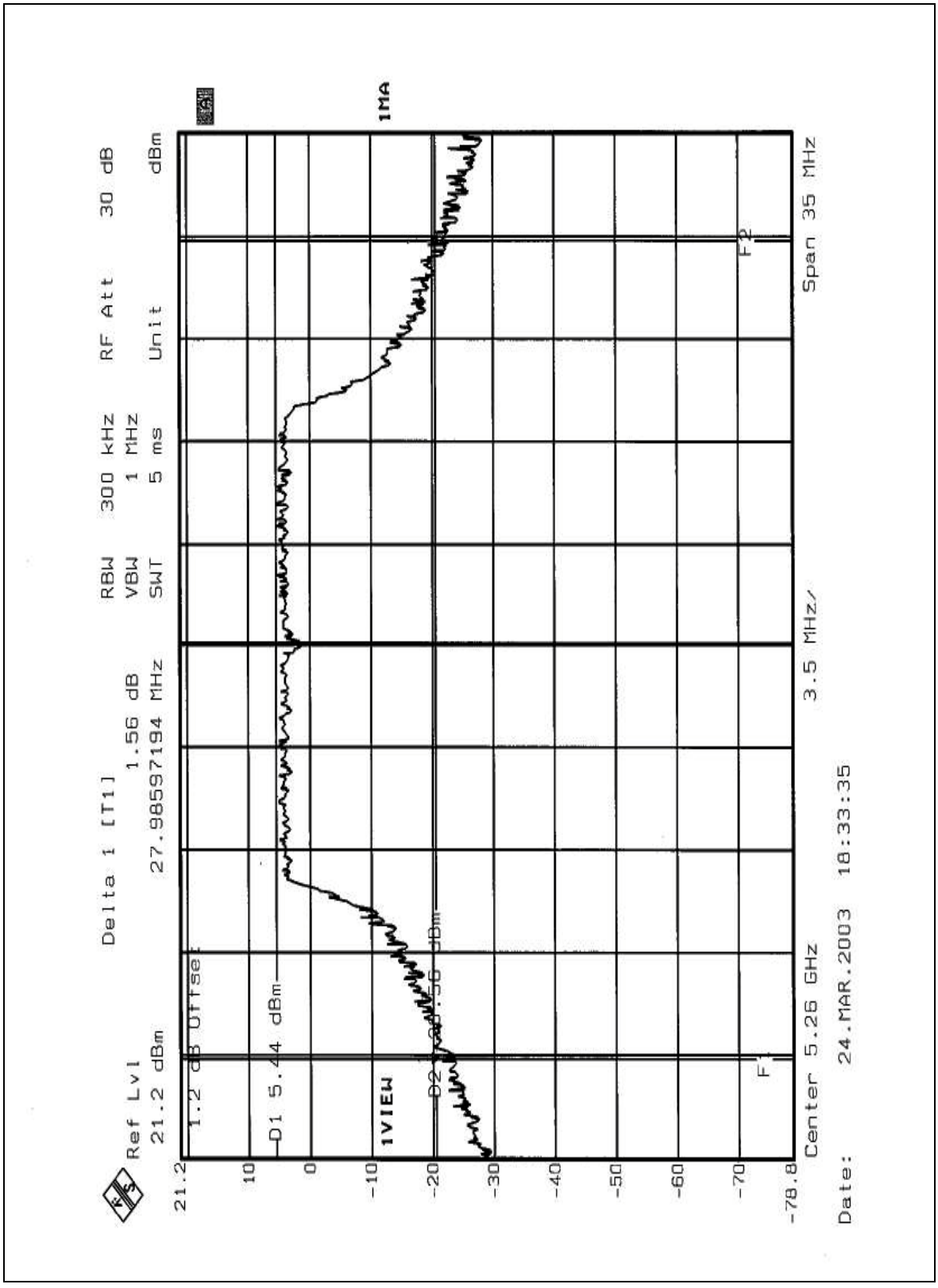
CHANNEL 1


Delta 1 [T1]
-1.26 dB
28.26653307 MHz
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
21.2 dBm
1.2 dB Offset
D1 5.14 dBm
1VIEW
D2 -6.86 dBm
1MA
F2
F1
Span 35 MHz
3.5 MHz/
Center 5.18 GHz
Date: 24.MAR.2003 18:30:47
21.2
10
0
-10
-20
-30
-40
-50
-60
-70
-78.8

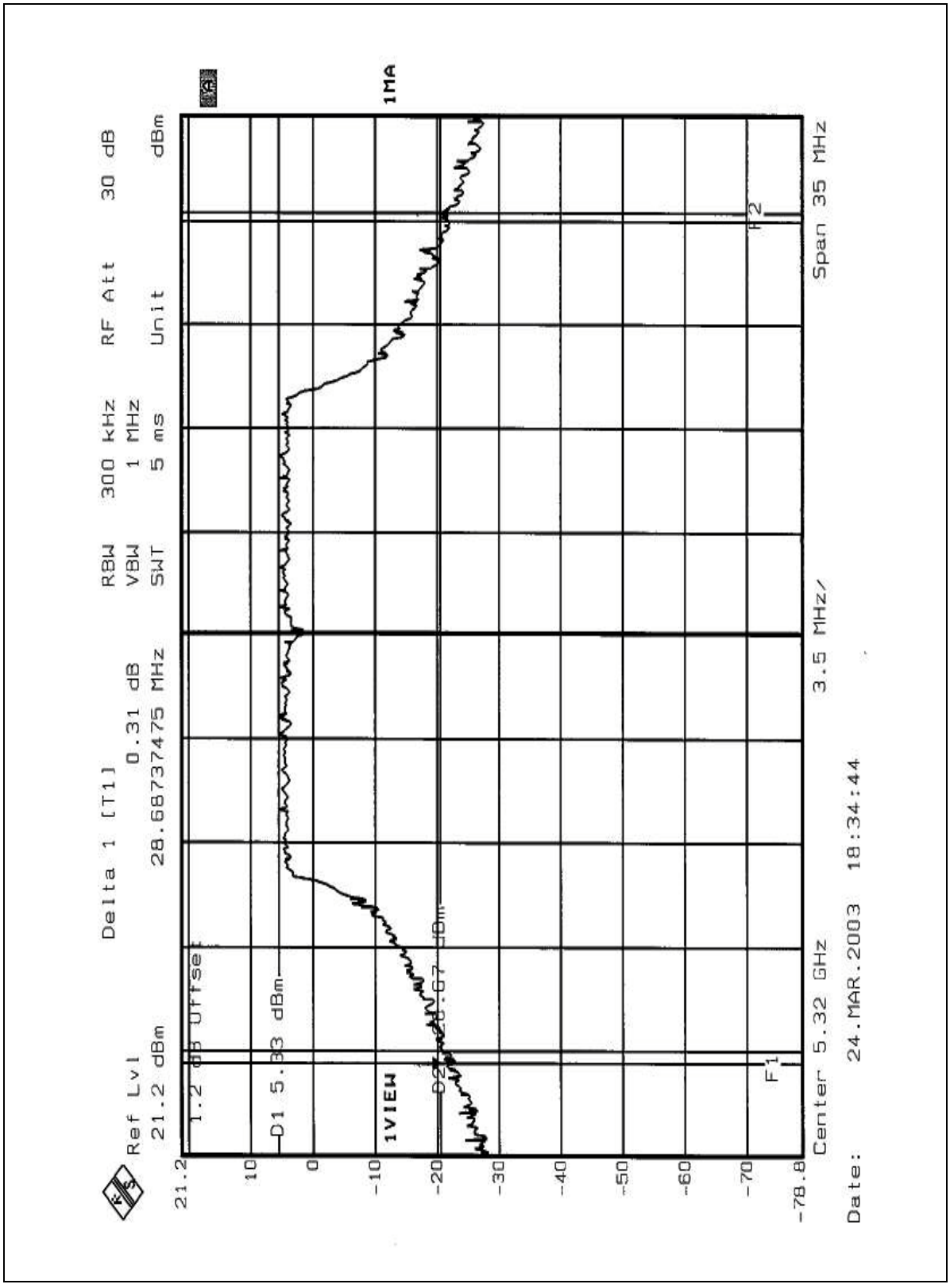
CHANNEL 4


Delta 1 [T1]
0.74 dB
28.82765531 MHz
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
21.2 dBm
1.2 dB Offset
D1 5.81 dBm
1VIEW
1MA
F1
F2
Center 5.24 GHz
3.5 MHz/
Span 35 MHz
Date: 24.MAR.2003 18:32:35

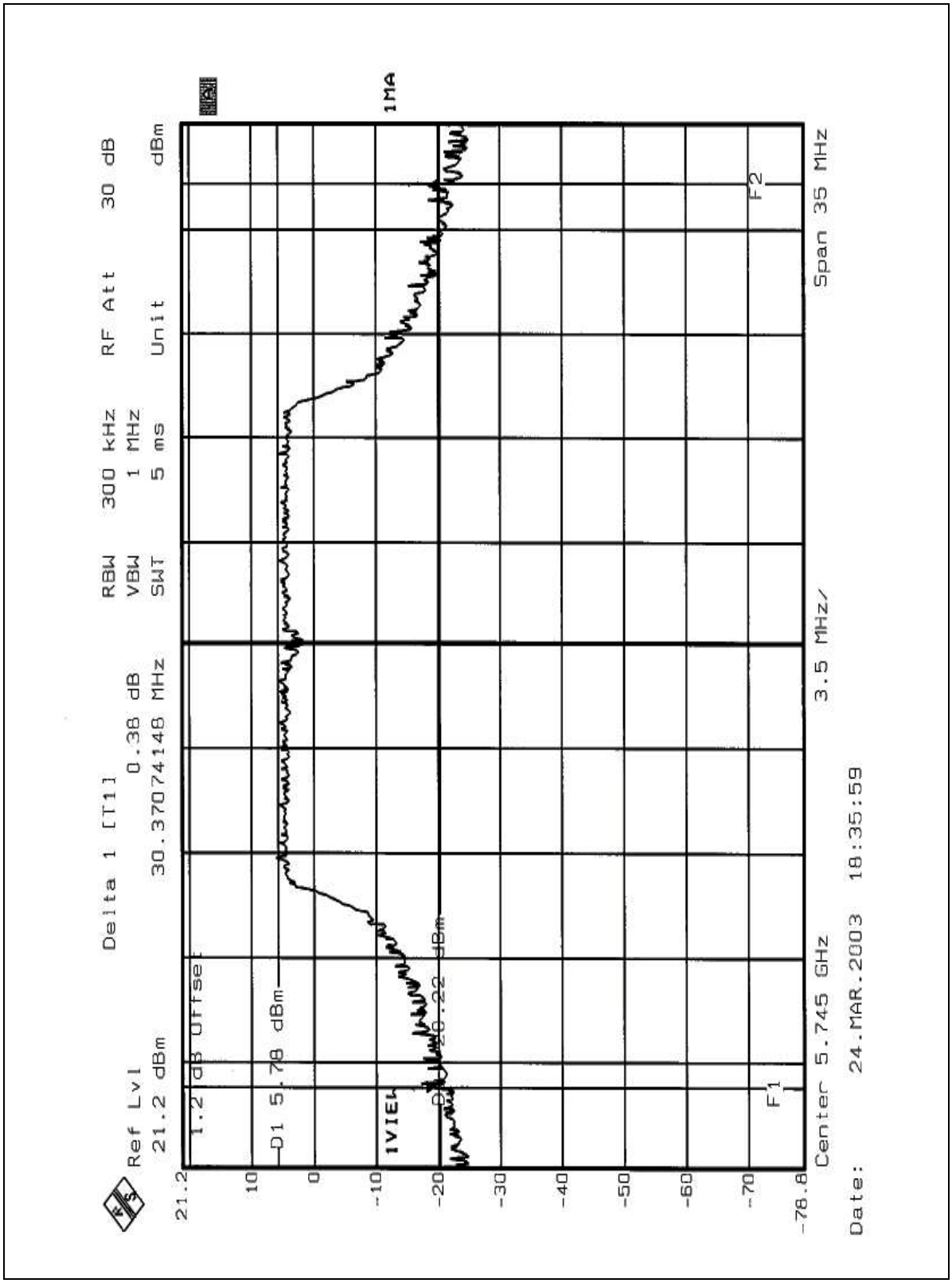
CHANNEL 5


Ref Lvl
21.2 dBm
1.2 dB Offset
Delta 1 [T1]
1.56 dB
27.98597194 MHz
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1MA
D1 5.44 dBm
1VIEW
D2
F1
F2
Center 5.26 GHz
3.5 MHz/
Span 35 MHz
Date: 24.MAR.2003 18:33:35
21.2
10
0
-10
-20
-30
-40
-50
-60
-70
-78.8

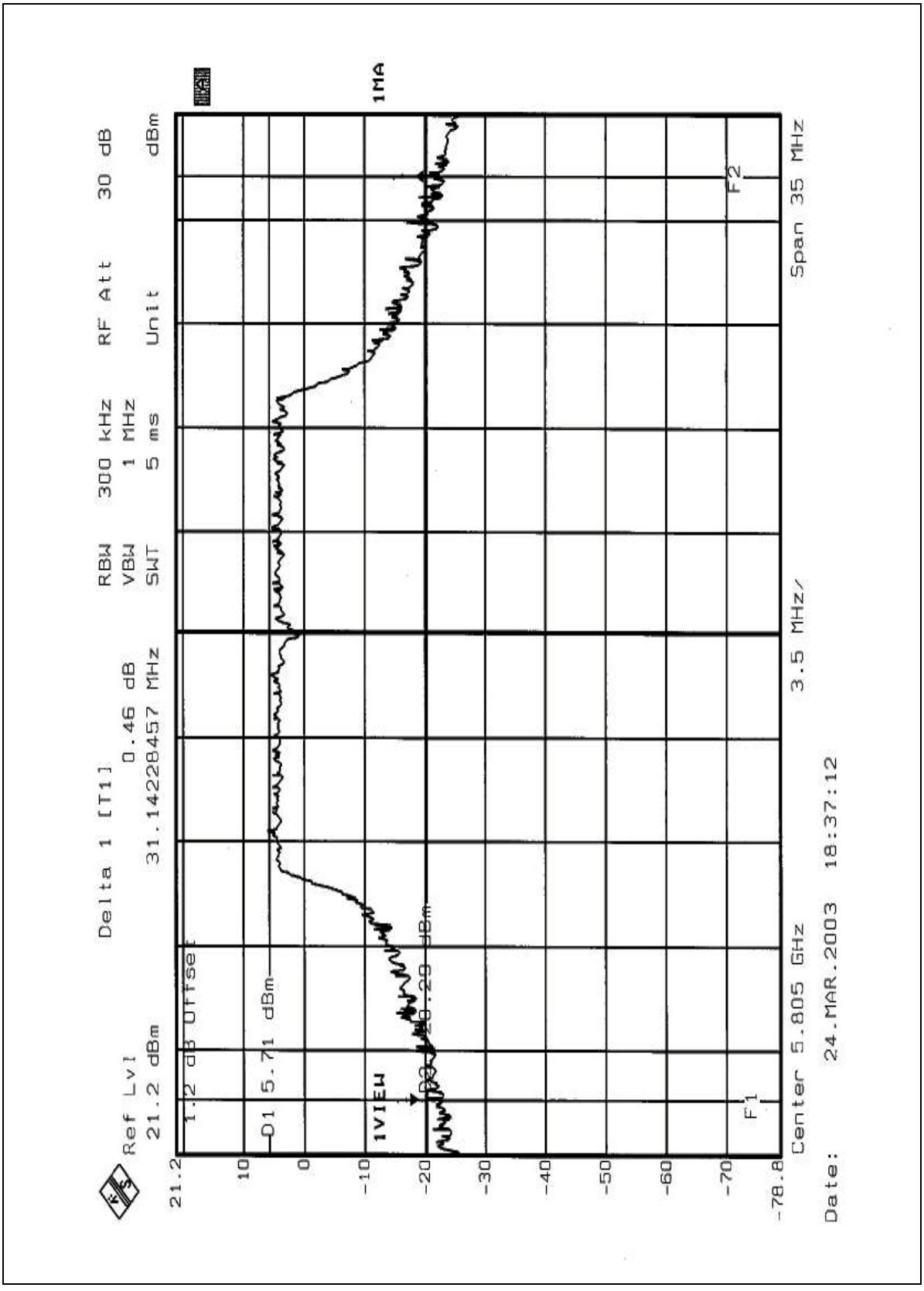
CHANNEL 8


Ref Lvl
21.2 dBm
1.2 dB Offset
Delta 1 [T1]
0.31 dB
28.68737475 MHz
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1MA
1VIEW
D1 5.83 dBm
D2 28.67 dBm
F1
F2
Center 5.32 GHz
3.5 MHz/
Span 35 MHz
Date: 24.MAR.2003 18:34:44
21.2
10
0
-10
-20
-30
-40
-50
-60
-70
-78.8

CHANNEL9


Delta 1 [T1]
0.38 dB
30.37074148 MHz
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
21.2 dBm
1.2 dB Offset
D1 5.78 dBm
D2 20.22 dBm
1MA
F1
F2
Center 5.745 GHz
3.5 MHz/
Span 35 MHz
Date: 24.MAR.2003 18:35:59

CHANNEL12

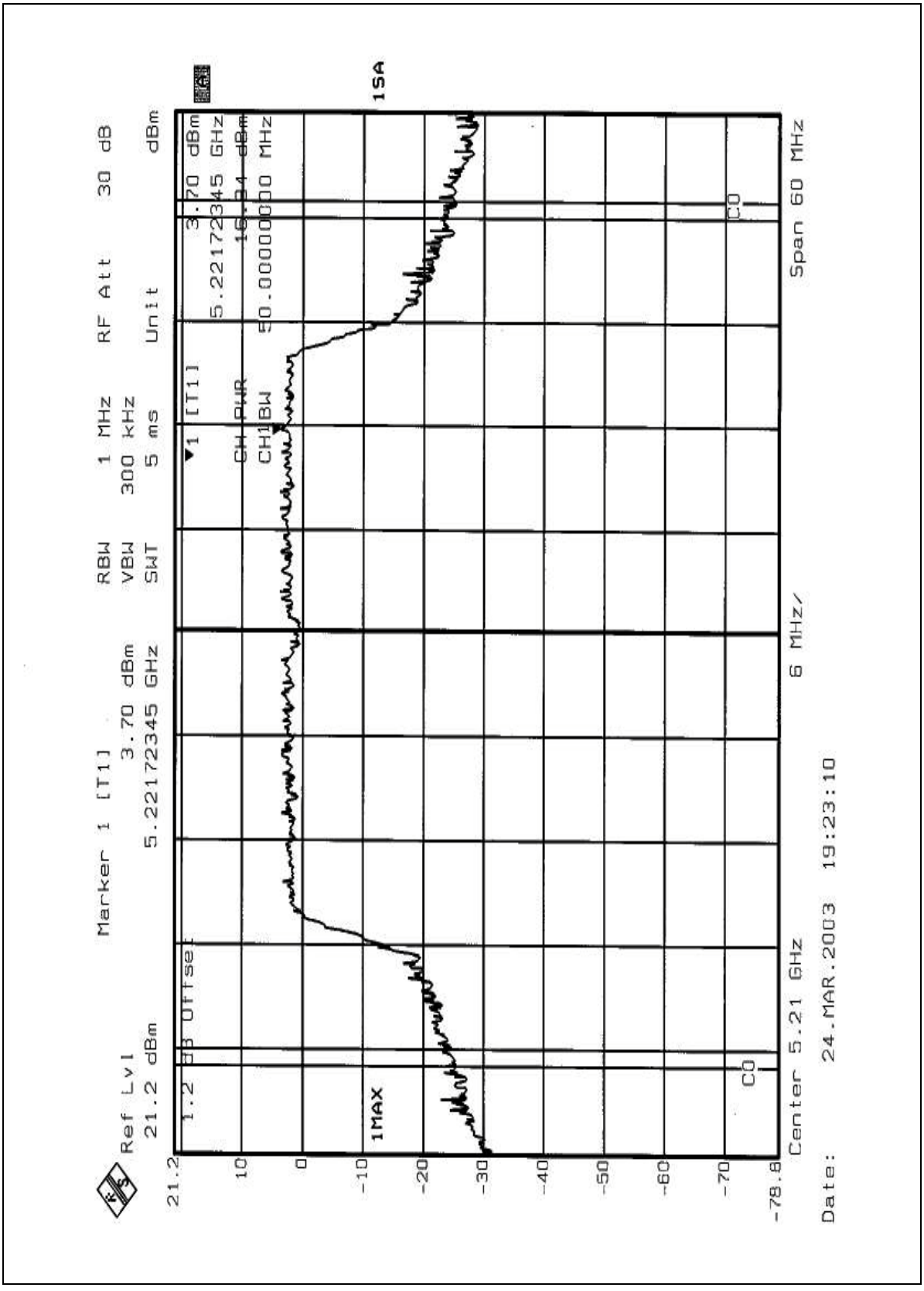

Ref Lvl
21.2 dBm
1.2 dB Offset
D1 5.71 dBm
1VIEW
D2 -20.29 dBm
F1
F2
Delta 1 [T1]
0.46 dB
31.14228457 MHz
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1MA
Center 5.805 GHz
3.5 MHz/
Span 35 MHz
Date: 24.MAR.2003 18:37:12
21.2
10
0
-10
-20
-30
-40
-50
-60
-70
-78.8

EUT	2.4GHz/5GHz Mini - PCI Card	**MODEL**	WLL220
MODE	Turbo	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	19 deg. C, 69RH, 991 hPa	**TESTED BY**	Ansen Lei

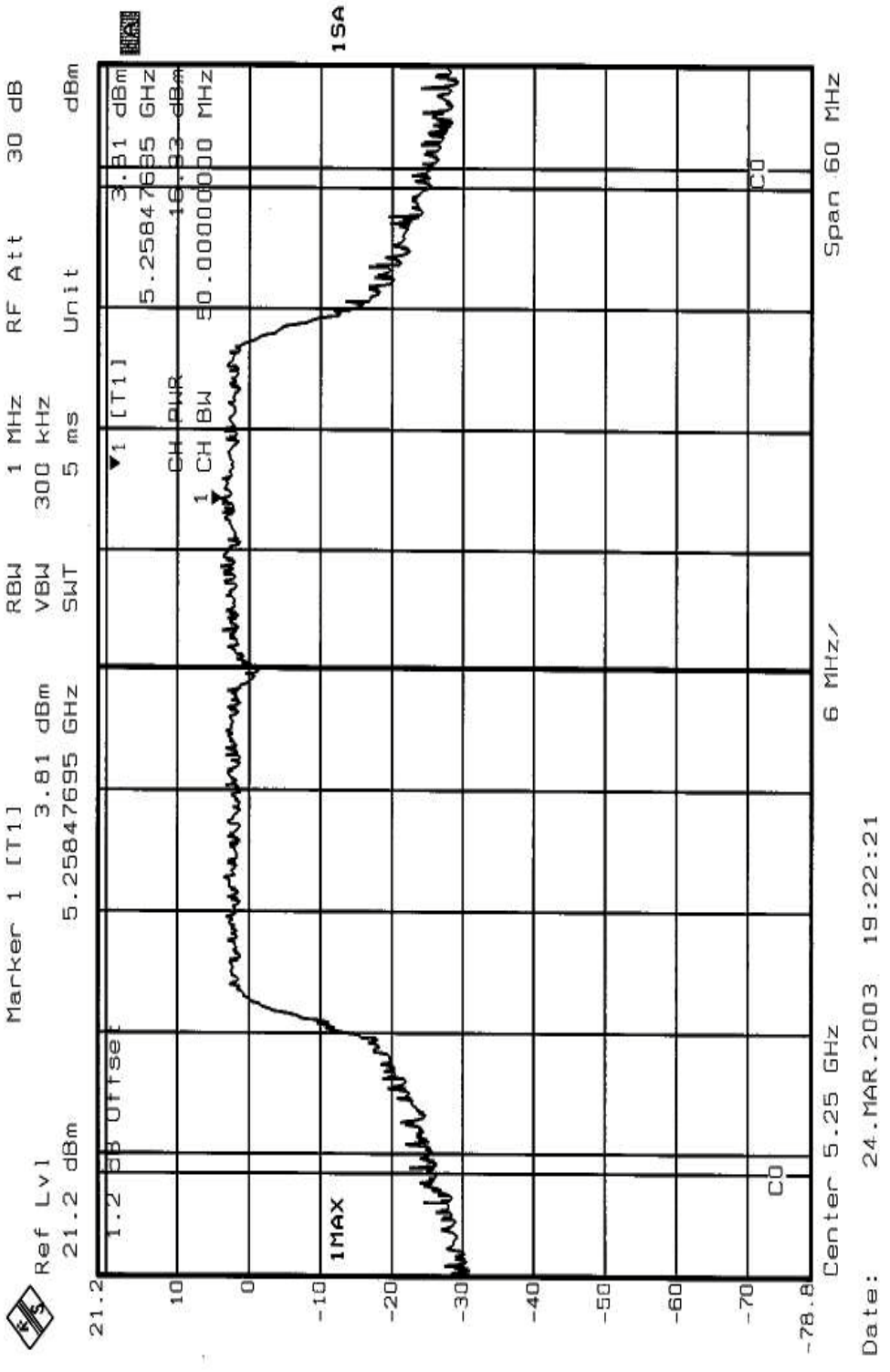
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5210	16.94	17.00	48.34	PASS
2	5250	16.93	17.00	46.77	PASS
3	5290	21.76	24.00	49.54	PASS
4	5760	19.14	30.00	54.83	PASS
5	5800	16.03	30.00	51.82	PASS

NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

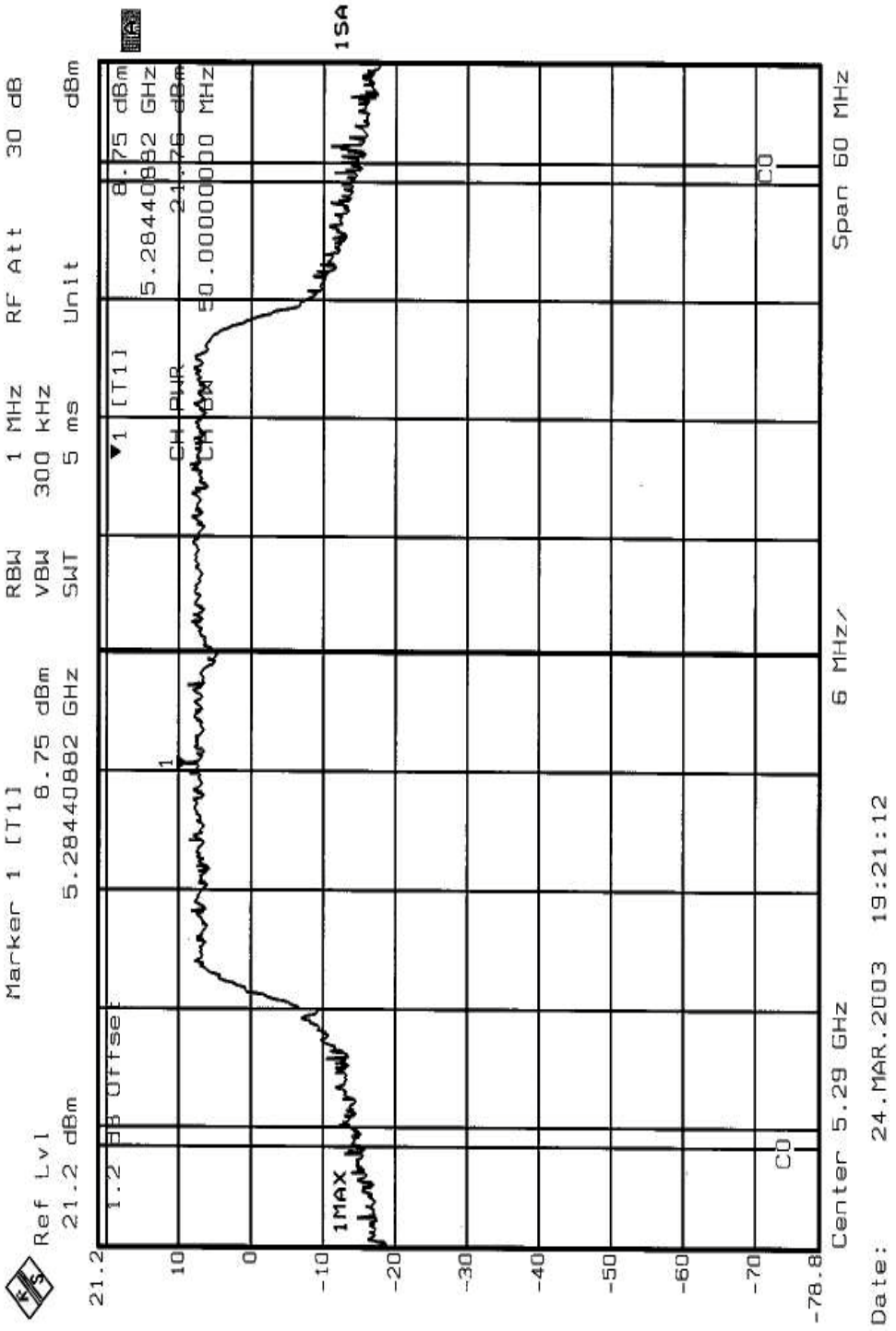
CHANNEL 1


Ref Lvl
21.2 dBm
1.2 dB Offset
Marker 1 [T1]
3.70 dBm
5.22172345 GHz
RBW 1 MHz
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1 [T1]
3.70 dBm
5.22172345 GHz
CH PWR 16.34 dBm
CH1BW 50.00000000 MHz
1SA
1MAX
C0
Center 5.21 GHz
6 MHz/
Span 60 MHz
Date: 24.MAR.2003 19:23:10

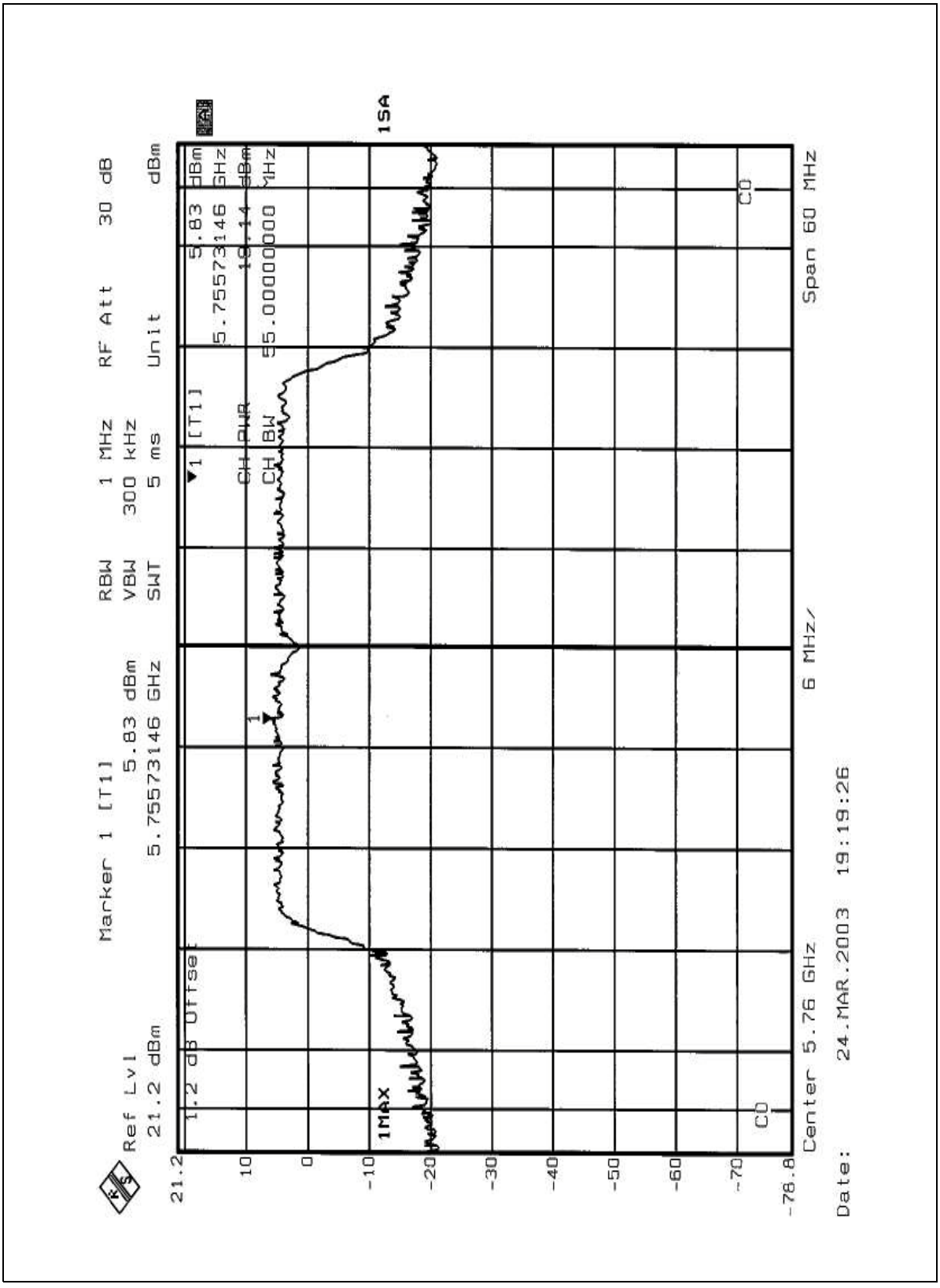
CHANNEL 2


Ref Lvl
21.2 dBm
1.2 dB Offset
Marker 1 [T1]
3.81 dBm
5.25847695 GHz
RBW 1 MHz
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1SA
1MAX
CO
Center 5.25 GHz
6 MHz/
Span 60 MHz
Date: 24.MAR.2003 19:22:21

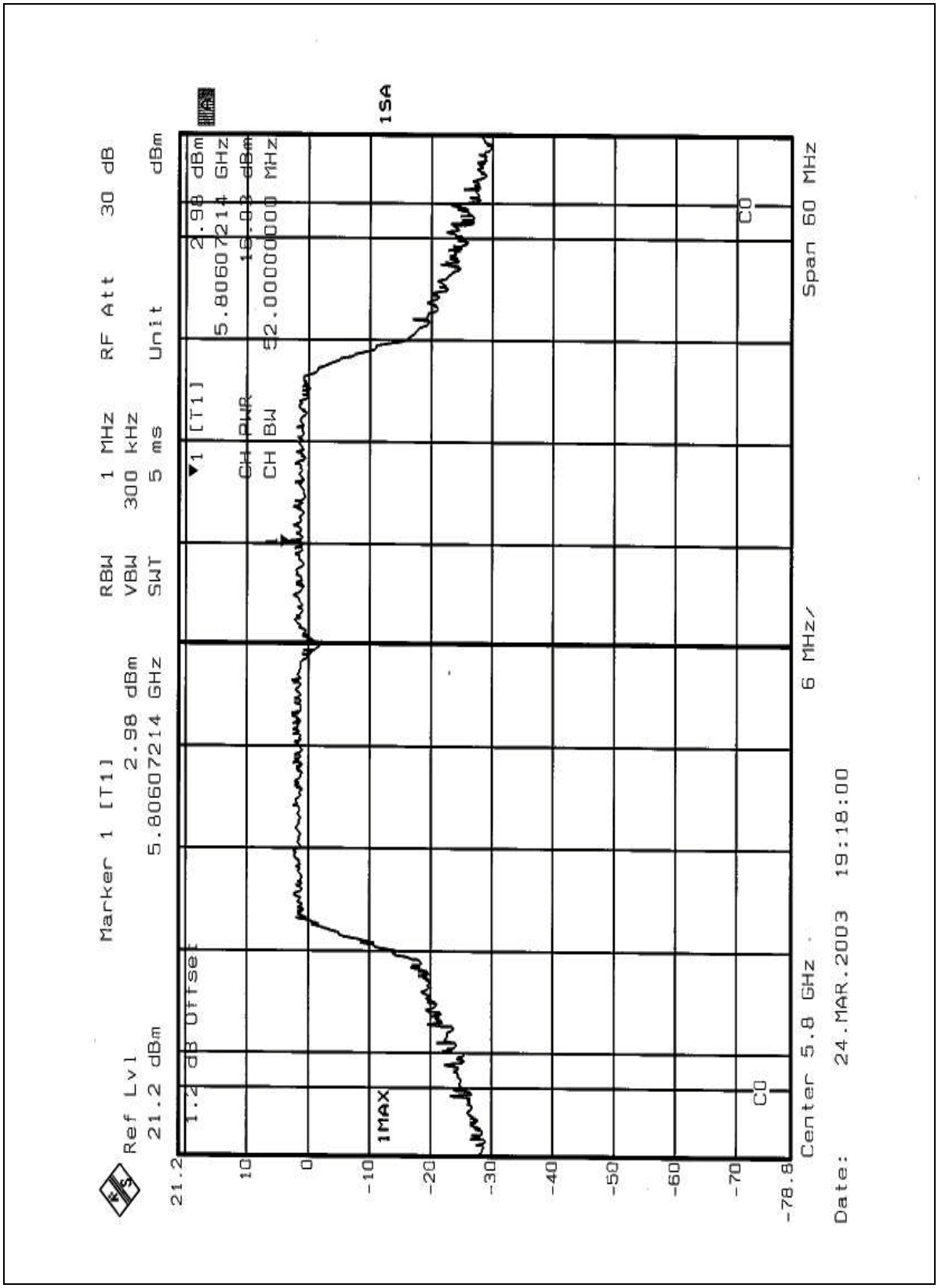
CHANNEL 3


Ref Lvl
21.2 dBm
1.2 dB Offset
Marker 1 [T1]
8.75 dBm
5.28440882 GHz
RBW 1 MHz
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1 [T1]
8.75 dBm
5.28440882 GHz
CH PWR 21.76 dBm
CH BW 50.00000000 MHz
1SA
1MAX
CO
Center 5.29 GHz
6 MHz/
Span 60 MHz
Date: 24.MAR.2003 19:21:12

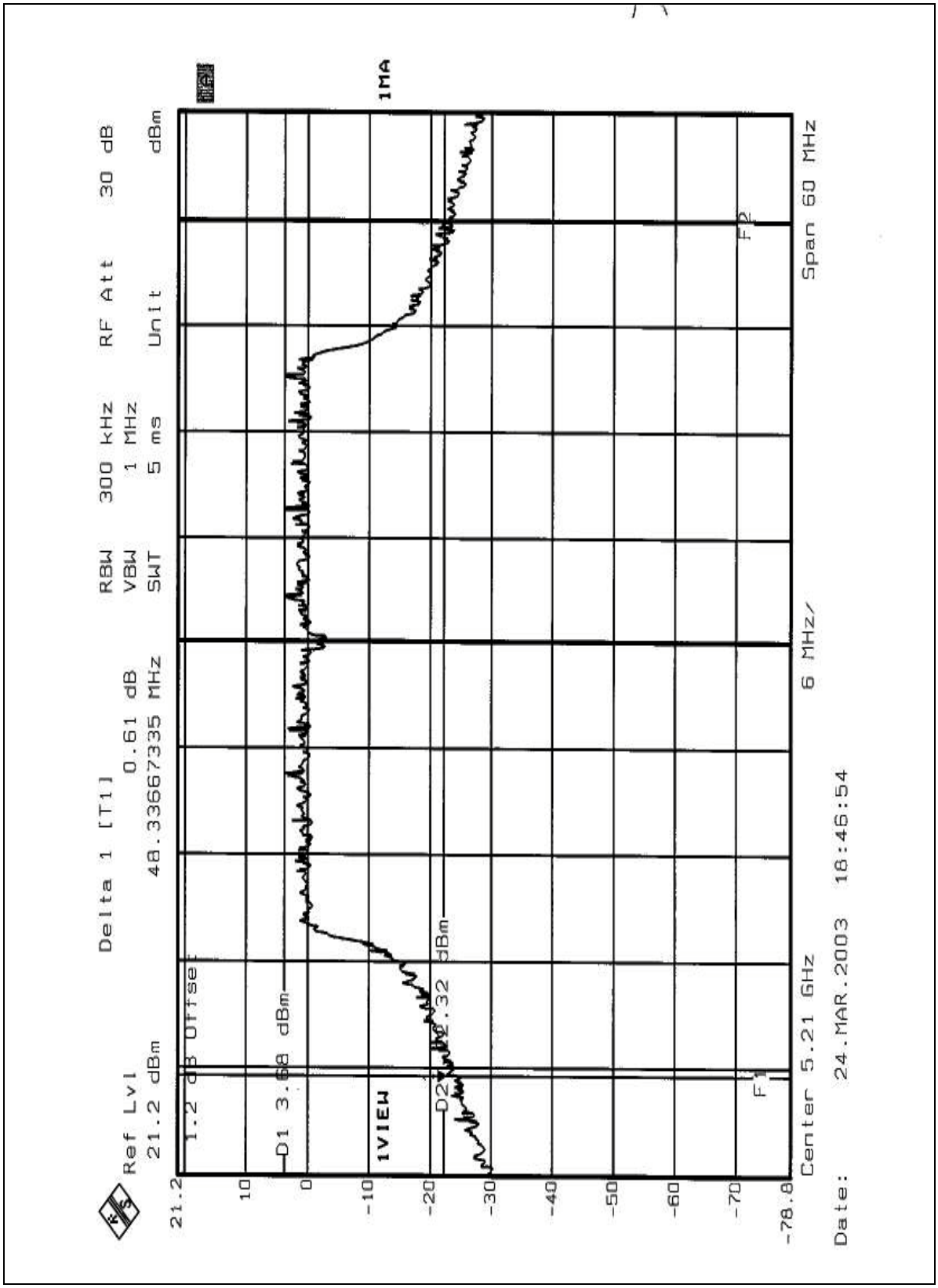
CHANNEL 4


Ref Lvl
21.2 dBm
1.2 dB Offset
Marker 1 [T1]
5.83 dBm
5.75573146 GHz
RBW 1 MHz
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1SA
1 [T1]
5.83 dBm
5.75573146 GHz
CH PWR 18.14 dBm
CH BW 55.000000000 MHz
1MAX
CO
Center 5.76 GHz
6 MHz/
Span 60 MHz
Date: 24.MAR.2003 19:19:26

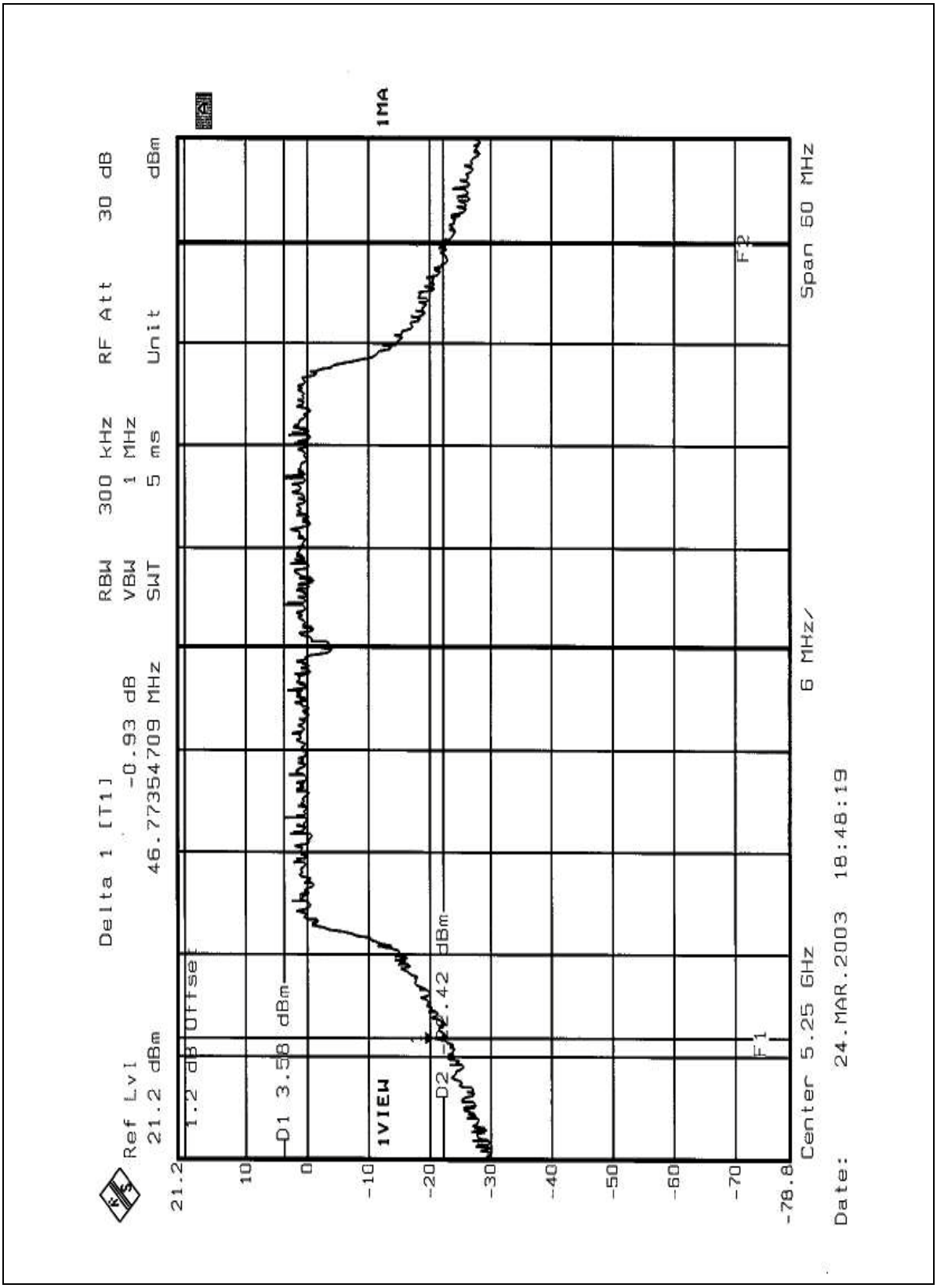
CHANNEL 5


Ref Lvl
21.2 dBm
1.4 dB Offset
Marker 1 [T1]
2.98 dBm
5.80607214 GHz
RBW 1 MHz
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1SA
1MAX
CO
Center 5.8 GHz
6 MHz/
Span 60 MHz
Date: 24.MAR.2003 19:18:00

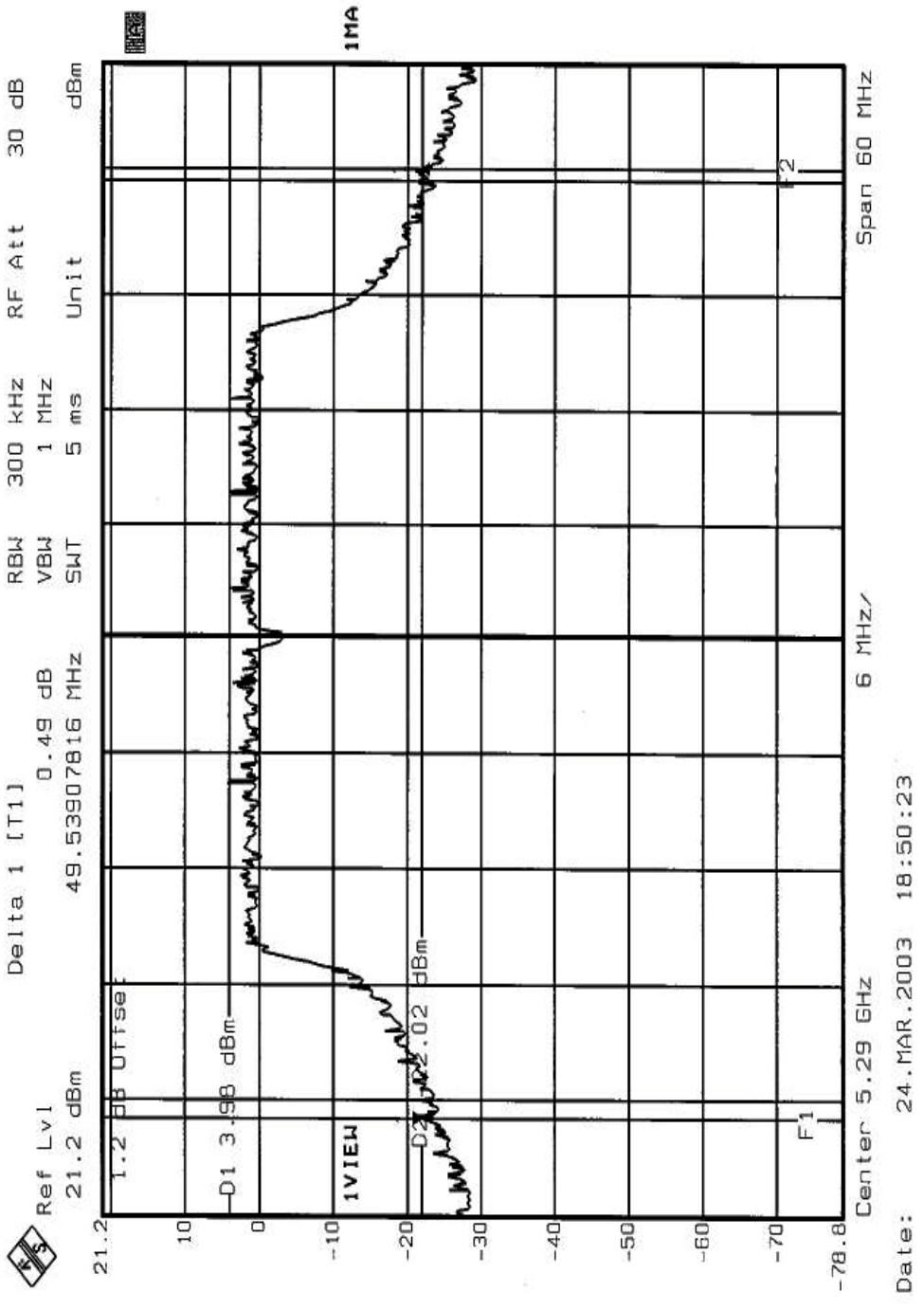
CHANNEL 1


Ref Lvl
21.2 dBm
1.2 dB Offset
Delta 1 [T1]
0.61 dB
48.33667335 MHz
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1MA
1VIEW
D1 3.68 dBm
D2 -2.32 dBm
Center 5.21 GHz
6 MHz/
Span 60 MHz
Date: 24.MAR.2003 18:46:54

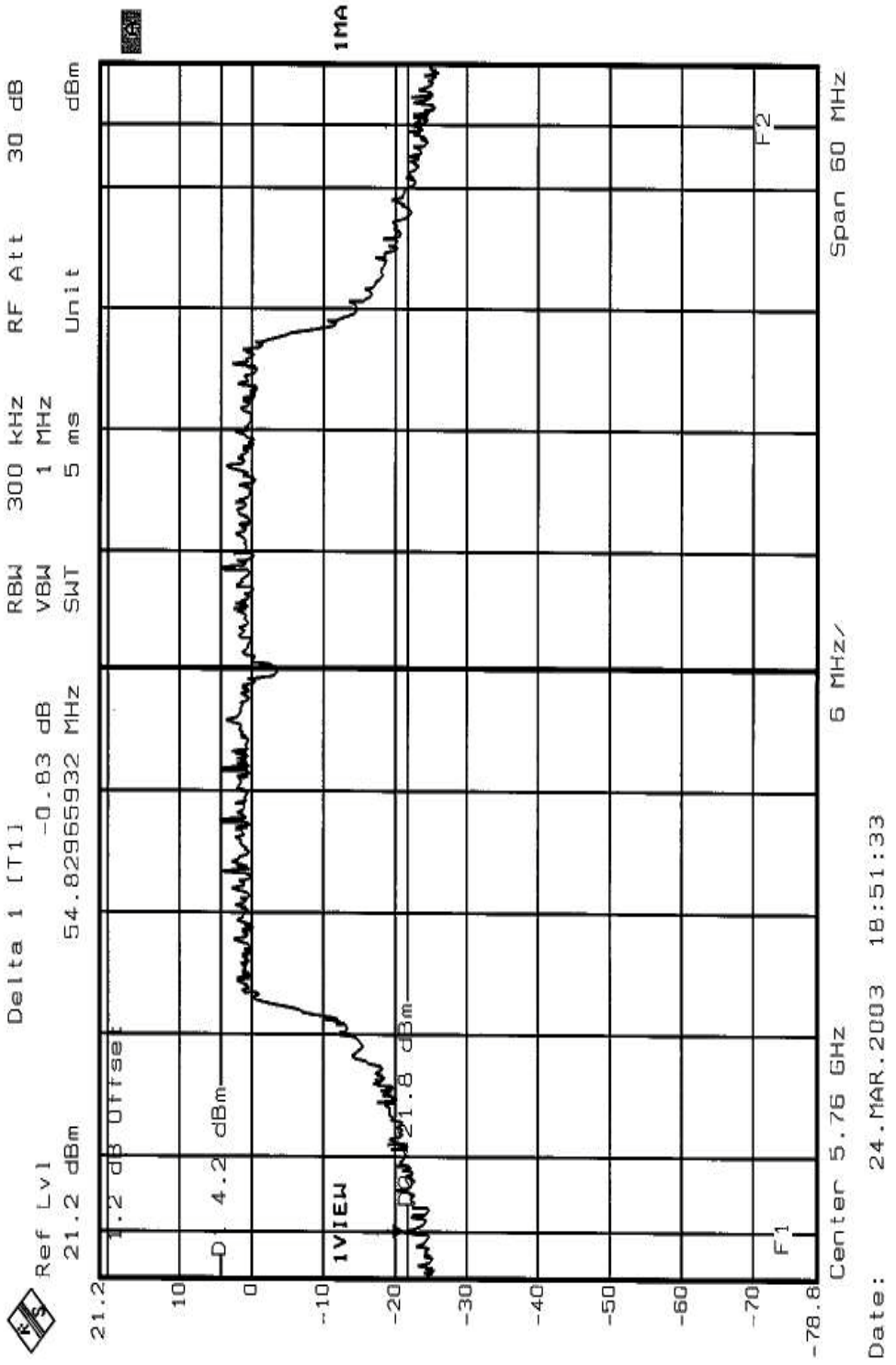
CHANNEL 2


Delta 1 [T1]
-0.93 dB
46.77354709 MHz
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
21.2 dBm
1.2 dB Offset
D1 3.58 dBm
D2 -2.42 dBm
1VIEW
1MA
F1
F2
Center 5.25 GHz
6 MHz/
Span 60 MHz
Date: 24.MAR.2003 18:48:19
21.2
10
0
-10
-20
-30
-40
-50
-60
-70
-78.8

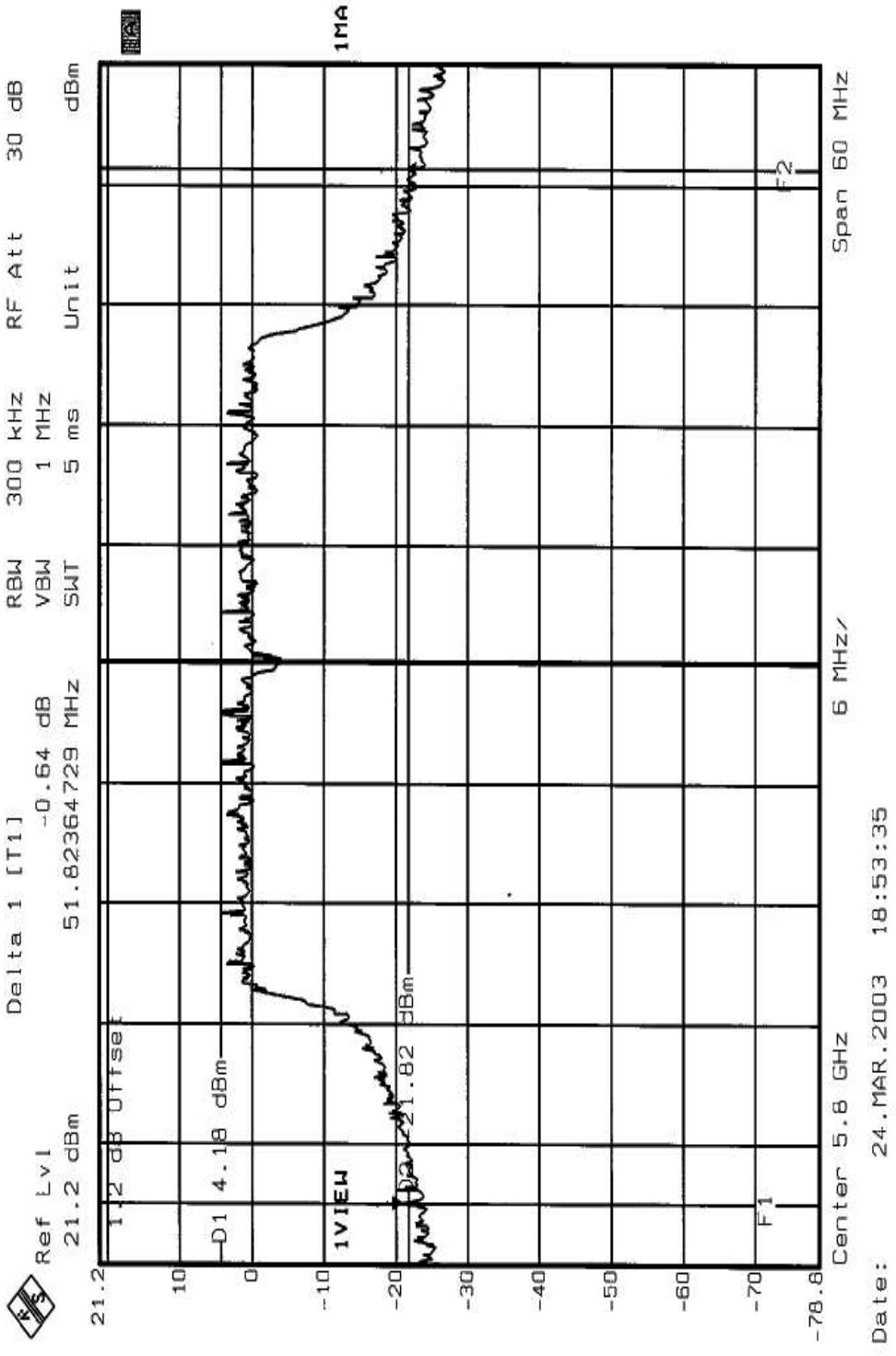
CHANNEL 3


Delta 1 [T1]
0.49 dB
49.53907816 MHz
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
21.2 dBm
1.2 dB Offset
D1 3.98 dBm
D2 -2.02 dBm
1VIEW
1MA
F1
Center 5.29 GHz
6 MHz/
Span 60 MHz
Date: 24.MAR.2003 18:50:23
21.2
10
0
-10
-20
-30
-40
-50
-60
-70
-78.8

CHANNEL 4


Delta 1 [T1]
-0.83 dB
54.82965932 MHz
Ref Lvl
21.2 dBm
1.2 dB Offset
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
D 4.2 dBm
1VIEW
D1 21.8 dBm
1MA
F1
F2
Center 5.76 GHz
6 MHz/
Span 60 MHz
Date: 24.MAR.2003 18:51:33
21.2
10
0
-10
-20
-30
-40
-50
-60
-70
-78.8

CHANNEL 5


Ref Lvl
21.2 dBm
1.2 dB Offset
Delta 1 [T1]
-0.64 dB
51.82364729 MHz
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1MA
D1 4.18 dBm
1VIEW
D2 21.82 dBm
F1
F2
21.2
10
0
-10
-20
-30
-40
-50
-60
-70
-78.8
Center 5.8 GHz
6 MHz/
Span 60 MHz
Date: 24.MAR.2003 18:53:35